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A Sandhills Publication

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In Plain English

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IMPROVE SYSTEM PERFORMANCE

Clean It Out, Speed It Up!

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THIS MONTH'S COVER STORY:

Clean Up Your Drive

News & Notes

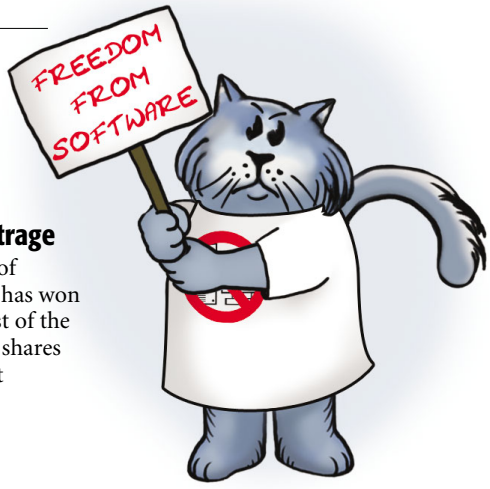
Reviews

Microsoft Wireless Laser Desktop 4000

Windows Tips & Tricks

General Computing

Plugged In



Tech Support

Quick Studies

Tidbits

July Web-Only Articles

***Smart Computing* subscribers may read the following articles at SmartComputing.com.**

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For the best prices on the latest hardware, visit the Where To Buy area at SmartComputing.com (www.smartcomputing.com).

Quick Studies

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Tabs Define Horizontal Spacing

Broderbund Print Shop 20 Deluxe
Set Paragraph Characteristics

Corel WordPerfect 11
Change Default Settings

Roxio PhotoSuite 7 Platinum
Troubleshoot Error Messages

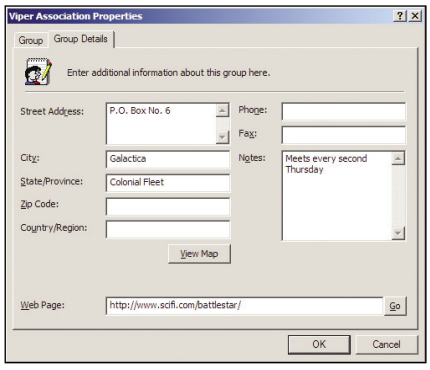
Roxio PhotoSuite 7 Platinum

Email
Manage Multiple Profiles In Thunderbird

Adobe Photoshop Elements
Add Oomph With Graphics & Text

Security
Test Your Security

Microsoft Works 2005
More Group Features



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The Audit Bureau Member

Editor's Note

Other than a few fans, there's only one piece of equipment in your computer that has multiple moving parts, and—wouldn't you know it—it's the component that most of us would consider to be the system's most important: the hard drive. You have months' (perhaps years') worth of important data on that drive, much of it critical, some of it literally irreplaceable. And all of it depending on a dangerously delicate mechanism that would've done Rube Goldberg proud: a read/write head riding on a tiny cushion of air a small fraction of an inch above a magnetic platter that's spinning at speeds of 5,000rpm, 7,200rpm, or greater.

This is why we panic when we hear (or imagine that we hear) that first grinding noise from our hard drives. We know that when a drive starts getting noisier, failure may soon follow.

Of course, it doesn't take a catastrophic failure to cause a drive problem. A simple lack of space will do just fine. That 12GB drive that seemed so huge a couple of years ago doesn't look so cavernous in an age when we're storing thousands of MP3s, hundreds of hi-res photos, or dozens of home videos on our drives.

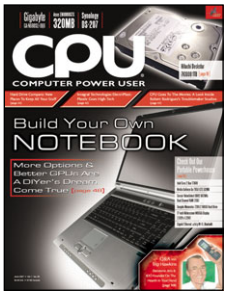
So what's a poor computer user to do? Funny you should ask! (OK, I know you didn't really ask. That was just a rhetorical device. Work with me here.) You do have options: You could clean up your existing drive, defragmenting and optimizing it. Or you could replace it. Or you could add another drive. If this all sounds a little intimidating, relax; we'll show you how in this issue of *Smart Computing*.

Rod Scher, Publication Editor

Catch Our Latest Issues . . .

Computer Power User

Build Your Own Notebook



Power users have been building their own desktop PCs for a long time, but building a top-shelf notebook has always been a little tougher. Find out how a bigger whitebook chassis selection and better mobile GPUs are changing all of that this month in *CPU*.

First Glimpse

Digital Camera Buying Guide

Today's digital cameras are some of the most fun and most affordable CE devices on the market, but with so many to choose from, the buying process could get a bit confusing. In this month's issue of *First Glimpse*, we tell you everything you need to know about your new digital camera, including what mode to use for which scenario, what size of prints you'll get, and battery life.

Corrections/Clarifications

In the "Uninstall Internet Explorer 7" article in our May issue (pg. 38), it may be difficult to tell that there should be no spaces anywhere in the command used to uninstall IE7. To remove IE7, type **%windir%\ie7\spuninst\spuninst.exe**, with no spaces. In the April issue (also on pg. 38), a reader who provided a tip about cleaning CDs wanted to make sure we let you know that he specified that *distilled* water be used.

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DESKTOPS & LAPTOPS

UMPC Carries On Despite Low Consumer Interest, Alternatives

If we were betting journalists, we'd bet you don't own a UMPC (Ultra-Mobile PC). While the platform is certainly enticing, high prices are keeping these devices from the hands of most consumers, particularly when full-featured notebooks fall in the same price range—if not a price range that's lower.

But regardless of whether UMPC makers are trying to recoup high manufacturing costs or whether they're simply attempting to make a big buck, they're still trying hard to push the platform. Manufacturers such as HTC continue to work on designs that blend convenient portability with near-desktop power, and the results look better than ever.

For example, HTC's new Shift blends a 7-inch widescreen display, 1GB RAM, 30GB hard drive, built-in keyboard, 1.2-megapixel Web cam, fingerprint scanner, Wi-Fi, Bluetooth, tri-band HSDPA (High-Speed Downlink Packet Access), and EDGE (Enhanced Data for GSM [Global System for Mobile] Evolution). The Shift is similar in size to a couple of DVD cases stacked together, making it a potential replacement for bulky notebooks or underpowered handheld devices. A tablet mode slides the screen over the keyboard and allows the user to use a stylus (similar to traditional tablets), while a laptop mode utilizes the keyboard. The Shift, which runs Windows Vista, will be available in the third quarter of this year. Pricing was not available at press time.

UMPC (Ultra-Mobile PC) manufacturers continue to seek a place in the market for their devices. The new Vista-powered Shift, from HTC, could draw customers with its fold-out design.

Another HTC device, the Advantage, is slated for release through Amazon.com and other retailers this summer. The Advantage features a 5-inch VGA (Video Graphics Array) touch display, an 8GB hard drive, 256MB of flash memory, 128MB of RAM, a miniSD (Secure Digital) card slot, and more. This device runs Windows Mobile and features an integrated GPS (global positioning system) module.

Intel, which announced the pro-UMPC Origami platform with Microsoft last year, is now appearing to shy away from the platform. The company has been releasing details on the MID (Mobile Internet Device) platform, which is targeted more toward consumers than professionals. Unlike UMPCs, which primarily run Windows operating systems, MIDs would run Linux, helping to lower the price of the devices. The MIDs would also feature a 4- to 6-inch display, whereas UMPCs use 5- to 7-inch displays.

According to Intel, these MIDs will be available in multiple flavors aimed at different market segments. For example, a communications-based MID would include wireless connectivity, a hardware keyboard, touchscreen, Bluetooth headset, and video camera, while an entertainment-based MID might include a high-quality camera and sound, media playback shortcut buttons, wireless TV access, and more.

Although pricing estimates aren't available for MIDs, it's a sure bet that they'll be much more affordable than current-generation UMPCs, which run between $900 and $1,800. Also unknown is when MIDs will actually hit the market.

STORAGE

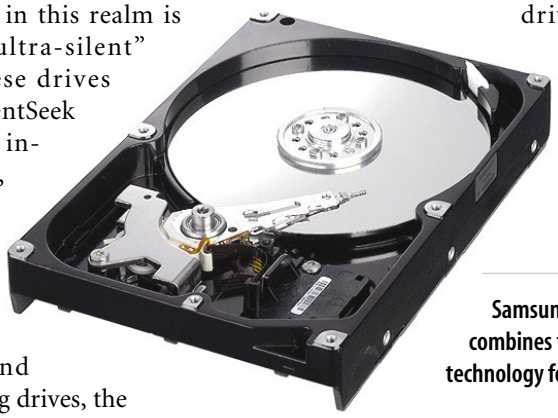
New Hard Drives Are Soft On The Ears

Manufacturers continue to work overtime to create quiet components for computers. In addition to power supplies, CPU cooling units, and graphics cards, hard drives are also receiving attention, and for good reason—drives are a notorious noise source.

One of the latest developments in this realm is the SpinPoint S166 series of "ultra-silent" hard drives from Samsung. These drives use the company's proprietary SilentSeek and NoiseGuard technologies to increase speeds while reducing noise, meaning that consumers won't have to sacrifice performance for silence.

How much quieter are these drives? According to Samsung, which benchmarked the 80GB and 160GB S166 drives against competing drives, the new drives generate 2.4 bels (1 bel equals 10 decibels) in idle mode and 2.75 bels in seek mode, compared with 2.8 bels and 3.2 bels, respectively, in competing drives.

The S166 drives feature 7,200rpm speeds, an 8MB buffer, a SATA (Serial Advanced Technology Attachment) 3Gbps (gigabits per second) interface, and NCQ (Native Command Queuing) technology, which boosts the internal read-write optimization of the drives. Also included is improved "fly-height" control technology that increases read-write sensitivity and an optimized actuator assembly that reinforces the mechanical function of the drives.



Samsung's new SpinPoint S166 hard drive series combines fast performance with noise-reducing technology for the best of both worlds.

DISPLAYS

Envision LCDs Pack Plenty For The Price

If you've been waiting for prices to drop on LCDs before replacing the space-hogging CRT (cathode-ray tube) that's currently monopolizing your desk, that time has arrived. Now more than ever, you can find attractive LCDs for about $200, and the selection continues to grow.

In fact, Envision (www.envisiondisplay.com) recently released three LCD models that range in price from $199 to $229 and span several resolutions and screen sizes. The cheapest of these monitors, the $199 17-inch H1781, features 1,280 x 1,024 resolution, a 5ms response time, a 700:1 contrast ratio, and horizontal and vertical viewing angles of 170 degrees. This wall-mountable monitor also includes the usual OSD (on-screen display) functions, allowing users to adjust basic controls such as contrast, brightness, color, and others.

The $219, 19-inch G918W1 widescreen LCD features a resolution of 1,440 x 900, a response time of 5ms, an 800:1 contrast ratio, and horizontal and vertical viewing angles of 160 degrees. The monitor also features 300cd/m^2 brightness for enhanced image clarity. The $229 H1981 is similar in specification to the H1781; however, it features an increased screen size of 19 inches but decreased horizontal (160 degrees) and vertical (145 degrees) viewing angles.

PRINTERS & PERIPHERALS

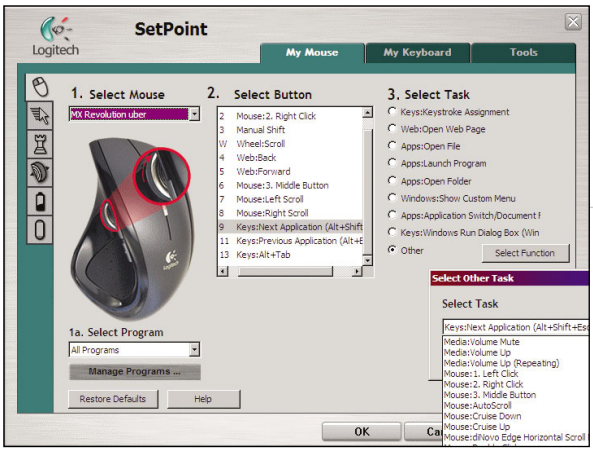
Eliminate SetPoint Struggles

If you own a Logitech mouse, you're likely familiar with the company's SetPoint software, which allows you to configure a range of functions on your mouse, including button behavior, pointer movement, scroll wheel behavior, and others.

But many users complain that the software is buggy and stubborn, sometimes to the point of refusing to allow them to configure basic options. For example, SetPoint won't let you bind certain behaviors to certain buttons, even if that's the way you'd like to use your mouse. Further, if you use the Firefox or Opera browser, you won't be able to use the Forward and Back actions.

Enter uberOptions (www.mstarmetro.net/~rlowens), a nifty little program that lets you override SetPoint's default settings and configure your mouse precisely the way you want it. In fact, this program is so powerful that it's easy to accidentally lose the function of your left mouse button, so if you try this utility, be careful when making changes (and make note of the author's suggestions for fixing such an accident).

Also, to upgrade SetPoint in the future, you'll need to uninstall uberOptions, install the SetPoint update, and reinstall uberOptions. While you might struggle through a few hassles with this utility, it's well worth it to obtain the expanded mouse functionality it delivers.



If you're tired of struggling with Logitech's SetPoint software, consider using uberOptions, which lets you transform your mouse into precisely what you'd like it to be.

CPUs, CHIPS & CARDS

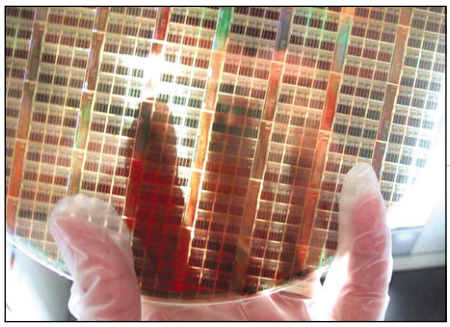
IBM Stacks The Chips (Literally)

In a breakthrough that IBM claims will "extend Moore's Law beyond its expected limits," the company has revealed a chip-stacking technology that packages chip components more efficiently to allow for faster, smaller, and more energy-efficient systems.

Called "through-silicon vias," the technology moves manufacturing from 2D chip layouts to 3D chip-stacking, where instead of placing chips and memory devices side by side, chips can be stacked upon each other. This "sandwich" of components not only decreases the required size of the chip package, but it also increases the performance of the package itself.

In fact, IBM says that the technique shortens the distance required by information to travel on a chip by a whopping 1,000 times and allows up to 100 times more channels to be added through which information can travel. This is accomplished thanks to the technology's ability to do away with the long metal wires traditionally used to connect 2D chips. Instead, the chip-stacking technique etches vertical connections through the silicon wafer and fills them with metal, according to IBM. These through-silicon vias in turn allow for chips to be stacked.

The company already is using the through-silicon vias technology in its manufacturing line and plans to make sample chips available to customers in the second half of this year. Production is slated to begin next year.



IBM's new chip-stacking technology reduces the distance between chips and memory devices, in turn boosting performance and decreasing package size.

DIGITAL MISCELLANEA

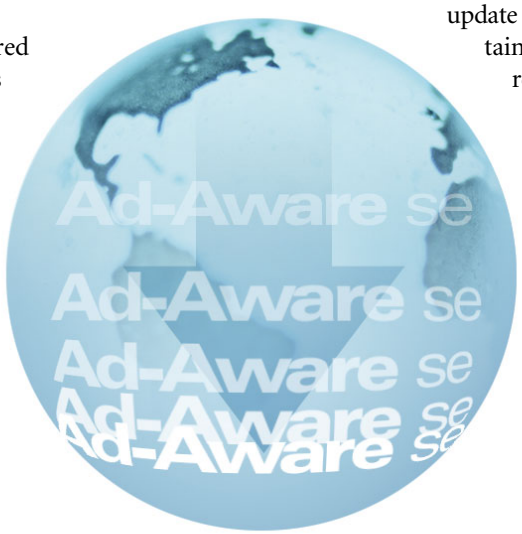
Ad-Aware Update Woes Abound

Recently, a reader wrote and complained that his copy of Lavasoft's Ad-Aware SE Personal Edition was giving him headaches during the update process. In particular, this popular antispyware program claimed that his definitions were 17 days old, despite the fact he'd updated them just a week prior. Furthermore, the program returned an error message when retrieving the update.

Upon further research, we discovered that hordes of Ad-Aware SE users have been experiencing this same problem. Some crafty users investigated the matter and recommended trying a slew of different possible fixes, ranging from deleting definition files to checking the Windows Hosts.ini file for possible spyware interference to manually downloading updates.

However, on April 4, Lavasoft issued an official fix for the problem, requiring users to uninstall their current version of Ad-Aware SE and download and install a new one from download.lavasoft.com/personal/aawsepersonal.exe.

Unfortunately, some users are still encountering update problems that prevent them from obtaining the latest definitions. If the most recent version of Ad-Aware SE doesn't fix the problem for you, visit the Ad-Aware SE subforum on official Lavasoft support forums at www.lavasoftsupport.com. Other users there regularly post potential fixes for the problems, any of which might solve your trouble.



PROBLEM-SOLVER: TROUBLESHOOTING THE NEWS

I recently added a second IDE (Integrated Drive Electronics) hard drive, but my BIOS (Basic Input/Output System) does not recognize it. Why?

On the back of your new hard drive and existing hard drive, check for a small, rectangular area that contains pins and a black or gray jumper. If you haven't moved this jumper on either of the hard drives, you'll need to move the jumper on your primary (or boot) drive to the Master position. On the new (or secondary) drive, you'll need to move the jumper to the Slave position.

Certain colors on my printouts appear fuzzy.

If any of the colors on your printed pages appear fuzzy or seem to have a shadow around them, chances are good your print head is misaligned. Refer to your printer's documentation or check your printer's software utilities for an option that fixes the alignment.

When I turn on my monitor, no picture appears.

First, confirm that the outlet you're using is working by plugging another device into it. If it's operational, next check that the power cord is firmly inserted in the back of the monitor and that the video cable is properly inserted into the graphics port on the back of your PC.

I installed a new CPU, but my computer refuses to boot.

When installing a new CPU, be sure to perfectly align the CPU with the socket. If you don't, you run the risk of bending pins and damaging the unit. If your computer won't boot after a CPU replacement, check that the CPU is properly aligned—if it isn't, make sure that you didn't bend or otherwise damage any pins in the process.

CONVERGENT TECH: PDAs & SMARTPHONES

Mobile Broadband Isn't Catching On

While the prospect of high-speed surfing while on the go seems like a sure-fire hit, consumers aren't quite jumping on the bandwagon. According to a recent study by Parks Associates, most consumers aren't willing to pay a high premium for mobile broadband access services.

Of the countries included in the study, only the United Kingdom had Internet users who are willing to pay a "significant" premium (28% on average) over the cost of a fixed connection for mobile broadband access. U.S. Internet users, on the other hand, are willing to pay just 6% above that cost for basic mobile broadband service. Consumers in other countries, including Japan, Italy, and South Korea, are even less interested in spending a premium, the study said.

"Wireless broadband access services marketed by mobile carriers today resonate with road warriors and are having success in that segment," said Yuanzhe (Michael) Cai, director of broadband and gaming, Parks Associates. "But the majority of Internet users primarily access the Internet at home and work and are unwilling to pay more for a subscription service they won't use on a frequent basis."

According to the research company, even at just $35 per month, only 19% of U.S. Internet users show interest in adopting a mobile broadband service. In reality, many mobile broadband plans cost more than $35 a month, and the plans themselves aren't always entirely clear when it comes to terms and conditions. For example, consider a recent problem that arose with Verizon's EVDO (Evolution Data Optimized) wireless data service.

Although Verizon allegedly marketed its EVDO service as unlimited, reports started to emerge that this "unlimited" service wasn't quite so unlimited. Last fall, PBS' Bob Cringley wrote that Verizon's service isn't actually unlimited, but instead, it's capped at 5GB per month. The company has specified that email, Web surfing, and similar data traffic was generally unlimited, but downloading music and videos was not. However, Cringley wrote that even if you didn't download music and videos but still reached that upper limit using primarily the "unlimited" content, you'd risk being kicked off the network.

The Washington Post also reported on this problem, noting that customers discovered that the limit was indeed 5GB, regardless of the type of data they were using on the network. The good news—at least in terms of clarity—is that Verizon has since addressed the matter, claiming that it has started moving away from the "unlimited" marketing angle and that it has added 5GB-specific language to the terms and conditions of the its Broadband-Access plan.

DULY QUOTED

"Not my scene at all—and nothing I would've ever guessed over an initial meeting and beer."

—Katie Laird, a proponent of the increasingly popular practice of "date Googling," expresses her distaste upon discovering that one of her dates was fascinated with vampires.
Source: Associated Press

News From The Help Desk

Our Most Common Tech Calls

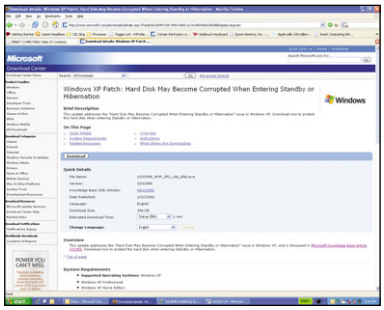
COMPILED BY KYLEE DICKEY

Each month, we receive numerous technical support calls and email messages. Some computer problems are fairly common, and we find that many callers struggle to resolve the same issues. In this article, we cover two of the most common or timely tech support questions and provide our solution for each of them.

Q My computer experienced a serious error after it went into either Standby or Hibernation mode. What happened, and how can I prevent this from happening again?

A This is a problem that may occur in Windows XP if your ATAPI (Advanced Technology Attachment Packet Interface) hard drive has a capacity of more than 137GB. When your computer enters Standby or Hibernation mode, the drive can become corrupted.

Microsoft has released a patch that prevents hard drive corruption from occurring when your computer enters Standby or Hibernation mode. First, make sure that you have installed WinXP SP2 (Service Pack 2). Then go to support.microsoft.com/search and type **KB331958** in the For field. Click Search. From the list of search results, click Hard Disk May Become Corrupted When Entering Standby Or Hibernation Or When Writing A Memory Dump. On the resulting page, click the Download button. When prompted, choose to save the 394KB file on your hard drive. After you download the file (Q331958_WXP_SP2_x86_ENU.exe), double-click it to launch the installer. After you install the file, restart your computer.



Microsoft offers a patch that can help your Windows XP system so that the hard drive will not become corrupted when your computer enters Standby or Hibernation modes.

Q Each time that I try to use WordPerfect, it either freezes while it's starting, or it generates errors. How can I fix this?

A Start by deleting or moving the default template for Corel WordPerfect. When WordPerfect doesn't find the template where expected, it automatically creates a new template. The reason you want WordPerfect to create a new template is so you can rule out the possibility that the old template had been corrupted.

To find the default template in WordPerfect X3, start by double-clicking My Computer and your hard drive's icon. In Windows 98/Me, double-click Windows, Application Data, Corel, and PerfectExpert. If you see a folder labeled 10, double-click it. Then double-click Custom WP Templates and delete or move WP10US.WPT. If you didn't see a folder labeled 10, double-click the folder labeled 13. Then double-click EN and Custom WP Templates. Then delete or move the file WP13US.WPT.

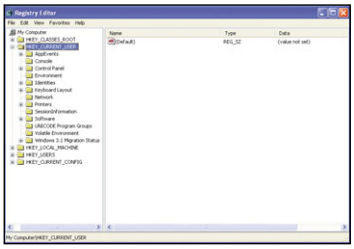
If you're using WinXP, double-click the drive; then click the Tools menu and select Folder Options. Click the View tab and make sure that the radio button for Show Hidden Files And Folders is selected. Click OK. Then double-click Documents And Settings, your username, Application Data, Corel, PerfectExpert, 13, EN, and Custom WP Templates. Either delete or move WP13US.WPT.

In earlier versions of WordPerfect (version 9 through version 12), you'll still need to make sure that you can see hidden files and folders in WinXP. In WinXP, browse to C:\DOCUMENTS AND SETTINGS\[USERNAME]\APPLICATION DATA\COREL\PERFECTEXPERT. Double-click the version number of your copy of WordPerfect. (For example, if you use WordPerfect 12, double-click the folder labeled 12.) Then double-click Custom WP Templates. If you use Win98/Me, browse to C:\WINDOWS\APPLICATION DATA\COREL\PERFECTEXPERT. Double-click the version number of your copy of WordPerfect. Then double-click Custom WP Templates.

The default template that you need to delete or move is named WP[*version number*][*two-character country code*].WPT. For example, the US release of WordPerfect 12 has a default template named WP12US.WPT.

If WordPerfect still won't launch after you remove the default template, you'll need to check Corel's site to make sure that you have the latest Service Packs installed for WordPerfect Office. To find the latest Service Packs, go to www.corel.com and click Support. Under Web-Based Services, click Patches And Updates.

If WordPerfect still won't start after you install the latest Service Pack and you have WinXP, try to create a new User



If WordPerfect freezes or presents an error message when you try to launch it, you may need to edit the Windows Registry after you have exhausted several other troubleshooting options.

Account. To find more information about User Accounts, go to www.smartcomputing.com/techsupport and type **User Accounts** in the Enter A Subject To Search By field. Click Search. Under Additional Results From The General Editorial Archive, you'll find the article "Start-To-Finish Guide." After you create a new User Account, log in to the new account and try to launch WordPerfect. If you still can't start the program, try reinstalling the software.

If you still can't launch WordPerfect, you'll need to edit the Windows Registry in order to restore WordPerfect's original settings. Remember that the Registry is essential to the proper operation of your OS (operating system), so you should always use extreme caution when editing the Registry. It's advisable to make a backup of the Registry before you begin. You can find detailed information about making a Registry backup by going to the SmartComputing.com Tech Support Center (www.smartcomputing.com/techsupport). Type **Registry Backup** in the Enter A Subject To Search By field and click the Search button. Under Additional Results From The General Editorial Archive, you will find several articles that contain instructions for backing up the Windows Registry. As you follow the instructions below, make sure that you do exactly what is described to avoid the disastrous results that can come with Registry errors.

Click Start and Run. Type **regedit** in the Open field and click OK. When the Registry Editor window opens, locate the folder HKEY_CURRENT_USER in the left pane. Click the plus (+) sign next to the folder to expand it. Next, click the plus sign next to Software to reveal its contents. Right-click the Corel folder and click Rename. Type **CorelOld** and press ENTER. Click File and Exit.

Next, if you use Win98/Me, double-click My Computer, your hard drive's icon, Windows, and Application Data. Right-click Corel and click Rename. Type **CorelOld** and press ENTER.

If you use WinXP, double-click My Computer, your hard drive's icon, Documents And Settings, your username, and Application Data. Right-click Corel and click Rename. Type **CorelOld** and press ENTER.

Once you've taken the steps described above, try to start WordPerfect. If it still won't run, you'll need to spend some time inspecting your printer's settings. First, make sure that you've cleared the print queue. Click Start, Settings, and Control Panel (or Start and Control Panel in WinXP). Double-click Printers And Faxes (or click Printers And Other Hardware and click View Installed Printers Or Fax Printers if you're using WinXP's Category View). Double-click your printer. In the resulting window, if you see any jobs listed, click Printer and Cancel All Documents. Click yes in the dialog box that appears. If you have more than one printer installed, make sure that you double-click each printer and cancel the documents for each printer.

If you still can't start WordPerfect, you'll need to edit the Windows Registry once again. Please remember the cautions we discussed earlier about editing the Registry. Click Start and Run. Type **regedit** in the Open field and click OK. In the Registry Editor window, expand the folders for HKEY_CURRENT_USER, SOFTWARE, and Corel. Right-click PrintEngine and click Rename. Type **PrintEngineOld** and press ENTER. Next, expand the folder WORDPERFECT and the version number of your copy of WordPerfect. Right-click Envelope and click Rename. Type **EnvelopeOld** and press ENTER. Scroll back up to the top of the Registry Editor window and click the minus (-) sign next to HKEY_CURRENT_USER. Click View and Refresh. Click File and Exit.

The solutions provided above will solve most problems launching WordPerfect. However, Corel offers a few more steps you can take if you still can't run WordPerfect. Go to www.corel.com, click Support and Search Our Knowledge Base Or E-Mail Corel, type **754014** in the Search Text (Optional) field, and click Search. Click Troubleshooting Printing Problems With WordPerfect.

Feature Package Topics

Each *Smart Computing* issue includes tips, reviews, and information about a variety of topics. However, each issue also has a featured group of articles about a selected topic. Below is a list of the Feature Packages from the previous year. As a *Smart Computing* subscriber, you have access to all of our archived articles at www.smartcomputing.com.

July 2006:	Repair & Speed Up Your System
August 2006:	Fix & Avoid Photo Problems
September 2006:	Clean Up Your Computer
October 2006:	Uninstall Stubborn Software
November 2006:	Easy Answers To Your Printing Questions
December 2006:	Make Your PC A Computerized Media Center
January 2007:	My PC Won't Start!
February 2007:	7 Critical Things You Should Know About Your Operating System
March 2007:	Resolve System Conflicts The Fast & Easy Way
April 2007:	Windows Vista: What To Expect From Microsoft's New Operating System
May 2007:	Set Up & Maintain A Wireless Network & Keep It Connected
June 2007:	Tweak & Troubleshoot Windows Vista

Parrot's Bluetooth-Enabled Digital Photo Frame | MSRP: $249.99 | www.parrot.biz

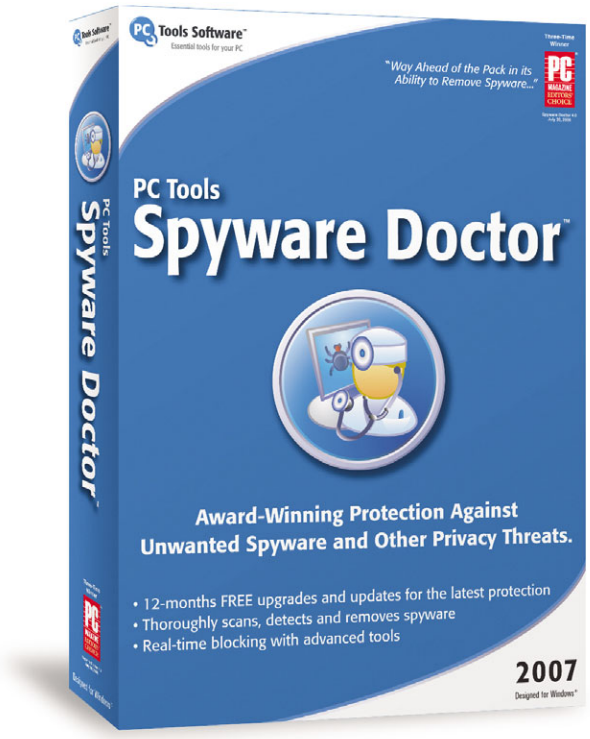
Finally, An Easy-To-Use Bluetooth-Enabled Digital Photo Frame

Parrot's new Bluetooth-Enabled Digital Photo Frame holds more than 500 images and has a 7-inch active-matrix TFT screen that displays exceptionally bright, crisp photo images. Transfer your photos to the frame via cell phone, camera, or computer.

- Holds 500 (JPEG) photos
- Bright, clear, 7-inch display
- Bluetooth-enabled
- Displays photos in slideshow or freeze-frame mode
- Automatically adjusts for horizontal/vertical frame position
- Adjustable brightness control
- Automatic shut-off

Enjoy your favorite photos, in the order you want, with customizable slideshows and an ultra-simple three-button user interface.

Parrot



PC Tools' Spyware Doctor | MSRP: $29.95 | www.pctools.com/spyware-doctor

Award-Winning Spyware Protection At A Price You Can Afford

Spyware Doctor is an industry-leading solution to the ever-growing spyware problem. Using state-of-the-art spyware detection and blocking technology, Spyware Doctor is able to detect and remove the most advanced spyware threats before they can damage your PC. Spyware Doctor is the experts' choice in anti-spyware but it's the tool that's easy enough for any novice to use.

- Recommended by experts and editors around the world
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- Frequent advanced updates ensure that you are always protected
- Detects, removes, and blocks all types of spyware and ad-ware threats
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Don't rely on the second-best for Internet security. Choose Spyware Doctor when only the best will do!

PC Tools Software
Essential tools for your PC

Buffalo Technology's Wireless-N Nfiniti™ Router | MSRP: $169.99 | www.buffalotech.com

Stream Music & Movies With The Wireless-N Nfiniti Router

Get great coverage and superior speed with the Wireless-N Nfiniti Router WZR2-G300N. Streaming photos, HD video, voice, and music is no problem, and setting up security is a snap.

- Wireless connections at speeds up to 300Mbps
- Easy setup with AirStation One-Touch Secure System
- Includes NAT/SPI firewall and intrusion detector
- Simple Web browser configuration
- Built-in 4-port 10/100 auto-sensing switch
- Up to 10X faster than standard routers

Now you can combine 801.11n speed and range with top-notch security and ease of setup. The Nfiniti router is perfect for streaming photos, audio, and video across your Wi-Fi network.

BUFFALO™

JVC HAF120 GumyPhones • MSRP: $9.99 • www.jvc.com

JVC Ear Candy: A Nonfat Confection For Your MP3 Player Or iPod

Stay stylish and comfortable with JVC's Gumy earbuds, available in a variety of mouthwatering colors. They're constructed with elastomer, a new type of material that promises a consistently comfy fit, whether you're biking, running, or just lounging in the sun. They're so affordable you can get a pair in every color!

Other features include:

- Frequency response: 16,000 to 20,000Hz
- Sensitivity: 109dB/mW
- Cord length: 3.9 feet
- Weight: 0.19 ounces
- L-shape gold-plated plug

JVC
The Perfect Experience

Bits & Bobs

Portable DVD Burning & A Drive Lover's Best Friend

Marty Semms

Send your comments to marty@smartcomputing.com

PX-608CU Super Multi-Portable Drive
$169
Plextor
(510) 440-2000
www.plextor.com

USB 2.0 Universal Drive Adapter
$24.95
Newertech
(800) 275-4576
www.newertech.com

You can't argue with cheap. Recordable DVDs store about six to 12 times as much as a recordable CD-R, and yet they're almost as inexpensive. I've bought reliable Verbatim DVD-Rs and DVD+Rs for as little as 21 cents apiece with rebates through Newegg.com, and so far, every rebate has shown up.

Optical discs may not be as convenient to use as an external hard drive, but they are more distributable. You can pop a DVD or CD into your safe deposit box or hand them out to family and friends. And because you can buy as many discs as you like, your storage capacity with an optical drive is unlimited.

For DVD burning on the go, consider Plextor's Super Multi-Portable Drive, model PX-608CU. It writes DVD-R (recordable) and DVD+R 4.7GB discs at up to 8X speed (10.8MBps), 8.5GB DL (dual layer) discs at 4X (5.4MBps [megabytes per second]), and even the old DVD-RAM format at 5X (6.75MBps). In CD terminology, it's a 24X (3.6MBps) burner.

The good news is twofold. Firstly, the drive is no bigger than it has to be. It's barely more than half an inch thick, and measures approximately 6.25 inches long by 5.5 inches wide. Secondly, the drive is bus-powered, meaning it draws its power from the computer through two USB cables: one carries data, and one supplies power. The drive also comes with an AC adapter for use with computers with USB ports that just can't supply the power the Plextor needs.

For CD and DVD burning in Windows 2000/XP, Plextor included Roxio Easy Media Creator 8 with my drive. For Vista compatibility, Plextor offers a link (www.roxio.jp/vista/oem/plextor/vistaupdate_enu.html) to a free upgrade to version 9. Mind you, it's an inordinately large 842MB download—that's bigger than WinXP Service Pack 2. Win98/Me users are kind of left out unless they supply their own burning software.

Windows Vista theoretically lets you burn DVDs without having to use extra software, but I've encountered frustrating delays and compatibility issues with this feature. Regardless, DVD writing is a feature long overdue in Windows and, I suspect, one that was artificially kept from WinXP to give users reason to upgrade.

My Plextor sample drive never did work correctly with a cutting-edge Vista PC, no matter what software I tried. It might not have been the drive's fault, although I couldn't pin down the exact cause before deadline. However, with a WinXP Pro, 1.7GHz Pentium M laptop, the Plextor seemed to work OK once I enabled recording in its Properties window in the Device Manager. Using Roxio 9, it backed up 4GB of data to a DVD-R in 18:42 (minutes:seconds). Strangely, it took even longer to burn a mere 687MB to a CD-R in 21:30.

Internal burners are faster and cheaper than portable external drives, but that's always been the case. What matters is that this Plextor is compact, bus-powered, and capable.

A New Tool

Newertech's USB 2.0 Universal Drive Adapter is definitely going into my computer toolbox. It's a USB cable kit that turns your IDE or SATA (Serial ATA) laptop or desktop hard drive into a temporary external unit. If you ever need to copy files from a discarded drive, or one with an OS (operating system) on it that no longer boots, you can use the Adapter to plug it into a working computer's USB port, and hopefully access it.

Included in the box are power adapters to run most types of drives. This isn't a poor man's external drive kit, however, as it doesn't encase the drive in a protective enclosure. A bare hard drive is vulnerable to bumps, spills, magnetic fields, and other hazards, so buy a quality enclosure kit if an external drive is what you really want.

Refreshingly, this kit just works. I used it to access an ancient Windows 95 notebook drive that hasn't seen much action since Windows 98 shipped. Bravo, Newertech!

Cell Phones, Bluetooth & A2DP

The Right Accessories Can Make Anything Tolerable

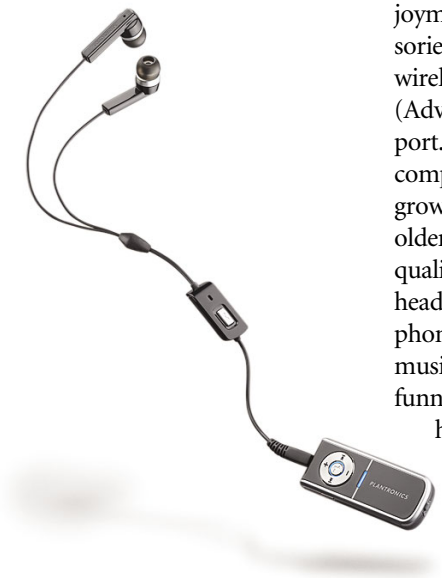
Blaine Flamig

Send your comments to blaine@smartcomputing.com

Any remnants of "old school" status I clung to with pride for years were unceremoniously ripped from my clutches months back in a terrifying instant I'll not soon forget. How? My wife's indomitable will. Why? I'd rather not divulge that fully at this time, as it would mean digging up a few bones of contention I've since managed to bury. Let's just say the matter had something to do with children and miscommunication and leave it at that. What I can let you in on completely is that despite many protests, excuses, and declarations that life would never be as unencumbered again, she bought me a cell phone. I swear the second she did, something sharp pierced my heart. I think it was a shard from my newly snapped spine.

Before I knew it, I was nose-deep in my Motorola RAZR's menu listening to sassy ringtone after sassy ringtone, sending text messages with all the skill of a one-eyed drunken sloth, retrieving voicemail I somehow had sent myself, and asking my kid for tech advice (another shard to remove). As much as it hurts, I'm now an official member of the rat race. Pass the cheese, please.

Still, behind the pain, I've found some enjoyment, particularly in the Bluetooth accessories I've been testing recently, including wireless headsets and speakers with A2DP (Advanced Audio Distribution Profile) support. A2DP is a Bluetooth profile that lets compatible devices, including an ever-growing list of cell phones (although not my older RAZR version) wirelessly stream stereo-quality audio to supported devices, including headsets and speakers. Thus, if your cell phone or PDA can pipe Bluetooth stereo music, A2DP-compatible headphones can funnel it to your ears in full, crisp quality. The handful of A2DP-supported accessories I've been using do produce traces of background white noise, but overall, the audio quality is definitely more than suitable for casual listening.



Some A2DP headsets include hands-free phone abilities, letting you place, answer, and reject calls without touching the phone. Jabra's BT620s ($129; www.jabra.com) and Wi-Gear's iMuffs MB210b ($179.99; www.wi-gear.com), for example, both have an over-the-ear headphone style that integrates a microphone into one of the cushions.

Plantronic's Pulsar 260 Bluetooth Stereo Headset ($109.95; www.plantronics.com) uses noise-isolating earbuds, which essentially create a seal in the ear canal to keep your music in and the squawking around you out. Stopping audio for an incoming call on the 260 requires pressing a button on a separate, small controller that also houses a microphone with impressive performance. Microphone quality varies among headsets, but a common characteristic I've found is recipients of my calls reporting weaker volume levels—UNLESS I TALK REALLY LOUDLY.

Using A2DP-supported devices with notebooks, MP3 players, and desktop PCs is where A2DP has really earned a membership in my Technology I Actually Use Club. The Pulsar 260, for example, can connect to my home theater system with an input cable to stream music from the phone. OK, I may not do this anytime soon, but instant messaging and placing VoIP calls with the BT620s or iMuffs is a definite go, as is pairing and using the BT 620s with two devices simultaneously. I'm also all over using the iPod adapter the iMuffs, BT 620s, and Etymotic's ety8 ($199 without iPod adapter; www.etymotic.com) each offer. Connected to an iPod nano, for example, the BT620s lets me roam anywhere from 30 to 50 feet from the player before audio drops out. Although the ety8 doesn't support hands-free phone abilities, its high-end audio is exceptional, partially due to its use of noise-isolating earbuds.

Practically speaking, A2DP headsets have been great for tuning out while exercising, doing yard work, cleaning, and other nomadic activities without having to carry a connected audio player around. Pairing the headsets with compatible devices—including a Bluetooth dongle for my notebook and PCs—has been mostly problem-free, although an ability to decipher Morse Code-like series of blinking LEDs definitely doesn't hurt. If a cell phone neophyte like me can do it, anyone can.

The Keys To Comfort

Key Ovation Offers A Fully Adjustable Keyboard

Kylee Dickey

Send your comments to kylee@smartcomputing.com

If you spend as much time at your computer as I do, you've probably experienced some type of pain or fatigue in your hands, wrists, or arms at some point. Left unattended, these early aches and pains can turn into a full-blown RSI (repetitive-strain injury). Of course, having the right desktop setup can help immensely by creating an ideal ergonomic computing environment. One keyboard that, in my experience, can work wonders is the Key Ovation Goldtouch Ergonomic Adjustable Keyboard.

Built To Please

What makes the Goldtouch keyboard so unique is that it is fully adjustable so that you can truly create the keyboard that is most comfortable for you. A lever on the upper-left edge of the keyboard locks it into place. Just pull the lever out and then adjust the keyboard any way you like. The two halves of the keyboard are joined in the center on the top of the keyboard with a ball bearing. You can not only angle the two halves of the keyboard out as you please, but you can also angle the center of the keyboard upward if it is more comfortable for you. I've found that what works best for me is a very slight split in the center of the keyboard together with a rather steep angle. This setup feels natural to me and reduces how much I need to twist my wrists downward when typing.

Goldtouch Ergonomic Adjustable Keyboard
$139.95
Key Ovation
(866) 277-9994
(512) 795-9994
www.keyovation.com

Surprisingly, once you lock the lever back into place, the keyboard is very solid as you type. With the amount of angling and adjusting that you can make to the two halves of this keyboard, you'd expect that the keyboard would wobble a bit when you type, but actually, the keyboard is much more stable than you would expect.

Unique Layout

One thing you may notice about the Goldtouch Ergonomic Adjustable Keyboard is that it lacks a number pad on the right side of the keyboard. Instead, the number pad functions are built into four rows of keys that extend horizontally from the 7 key to the 0 key and vertically from the 7 key to the *M* key. Just press the NUM LOCK key, and you can use these keys as if they were a separate number pad. It may seem like a minor thing, but by removing the standard number pad from the right side of the keyboard, Key Ovation cleared space for a mouse. My arm and shoulder thanked me for eliminating the need to constantly stretch past the number pad to reach my mouse. However, if you prefer to use a full-sized number pad, you can buy a separate Goldtouch Numeric Keypad ($49) from Key Ovation.

The keys normally located just to the left of the number pad; such as HOME, END, PAGE UP, and PAGE DOWN; run along the right side of the keyboard. What's especially unique about this keyboard, though, is that it contains DELETE and BACKSPACE keys not only on the right side of the keyboard but also on the left side

The only real complaint that I have about this keyboard is that the Spacebar feels a bit long on the left side. At first, I often tapped the Spacebar when I was trying to press the ALT key. It's not a huge problem once you get used to it, but it was irritating at first.

This keyboard comes in both USB and PS/2 varieties and in black and white. There's even a special Mac version of this keyboard that includes keys standard on Apple computers.

This keyboard has changed the way I use my computer. In fact, despite its relatively high price tag, I'm seriously considering buying a second keyboard so that I have one on each of my computers. For the casual computer user, this keyboard probably isn't worth the price, but for those of us who have struggled with pain from our time computing, the Key Ovation Goldtouch Ergonomic Adjustable Keyboard is a true blessing.

Scoff At Scuffs

Repair CDs & DVDs

Josh Gulick

Send your comments to joshua@smartcomputing.com

SkipDR AutoMax
$39.99
Digital Innovations
(888) 762-7858
(847) 463-9000
www.digitalinnovations.com

OptiFix Pro
$29.99
Memorex
(800) 231-6431
(562) 653-2800
www.memorex.com

A scratched CD or DVD is an irritant at best and a disaster in a worst case scenario. No one likes to find that his rented DVD movie skips during the most important scenes of the movie. But far worse is the scratched data CD that won't let you transfer important file backups to your computer.

The good news is that you can erase many scratches by grinding down a portion of the protective layer that covers the surface of the disc. The process removes the scratch without damaging the CD's data layer so that the CD works as though it were brand new. To that end, several computer accessory manufacturers have created special disc repair tools. I tested two such electronic devices: the Digital Innovations SkipDR AutoMax and the Memorex OptiFix Pro.

Scratch-Be-Gone

I kicked off this disc-repair cage match with a badly-scratched DVD that had just arrived from my favorite DVD rental service. Thanks to a slew of tiny scratches and a single, large scratch, my movie skipped from time to time and then consistently stopped at a particular scene. The SkipDR AutoMax took the first crack at the disc and completely wiped out all of the visible scratches, except for that one huge scratch.

This seemed to take care of the minor skipping; when I played the movie again, the DVD didn't skip at all until the scene at which it had always stopped. Sadly, it stopped again. I ran the disc through the SkipDR and the OptiFix Pro several times without seeing any further improvement. I suspect that this scratch had damaged the data layer.

Both of these devices are designed to handle only the minor scratches that affect a disc's protective layer, and both of them did that successfully on movie DVDs and data CDs.

Design

The SkipDR AutoMax and OptiFix Pro have very different designs. The SkipDR AutoMax is a bulky device that runs off six AA batteries (not included). Digital Innovations offers a $7.95 power adapter separately, which seems silly to me, as portability isn't very important here: It will probably just sit in your office. I would happily pay $44.99 instead of $39.99 for the complete package.

However, I like the rest of the SkipDR AutoMax package. Repairing a disc is an easy, fast process: I simply sprayed the disc and then popped it into the device. It repaired for about a minute and then ejected the disc, toaster style. Finally, I wiped it dry and buffed it with the included pads.

The OptiFix Pro, on the other hand, is a low-profile device that resembles a portable CD player. It doesn't use batteries, and it scores points by relying on a power adapter. That said, the OptiFix Pro's repair process is significantly more complicated than the SkipDR AutoMax's process.

I first placed the two Repair pads into the device and then squirted Repair Solution on one of the pads. I inserted the DVD and started the OptiFix Pro's repair, which lasted about two minutes. At this point, the instructions asked me to wipe the DVD with a cloth (not included). Next, I removed the DVD and the pads and then inserted a set of cleaning Pads. I then squirted cleaning solution onto the Cleaning pads, reinserted the DVD, and let the device run its cleaning process, which lasted about 45 seconds. The instructions again asked me to dry the DVD with a cloth. Whew.

Back In The DVD Player Again

I like both cleaners and I certainly like the OptiFix Pro's price better, but if I were shopping, I'd shell out the extra cash for the SkipDR AutoMax. Its repair process is faster than the OptiFix Pro's and it's very easy to use. I read the SkipDR AutoMax's instructions once and then I didn't need them again—I had to read the OptiFix Pro's instructions during several repairs before I could remember which solutions and pads went where, when. In this case, there's no real loser, but there is a clear winner: SkipDR AutoMax.

Back Up Online

Four Internet-Based Services

Buying Tips

Check out security. If you're going to be storing sensitive data, be sure to read about the site's security measures. Files should be encrypted before they ever leave your computer, and if the data is truly worthy of protection (client information, perhaps), look for a private key option that even the storage service itself can't decrypt.

Carbonite

Systems Supported
Windows Vista
Windows XP/2000
Windows Me
Windows 98
Mac
Linux

Mozy

Systems Supported
Windows Vista
Windows XP/2000
Windows Me
Windows 98
Mac
Linux

A couple of services do traditional, large-scale backups over the Internet: Carbonite and Mozy. While these backups take time to trickle through your 'Net connection, you can eventually back up all of your files for about $5 a month. Some services offer faster uploads and downloads (at a price both in money and storage limits), while others concentrate on sharing files as well as saving them.

Carbonite

Carbonite offers unlimited space to back up your entire computer for $49.95 a year. While you can have as much space as you need, bandwidth is restricted. You can upload about 2 to 3GB a day until your account hits 50GB; after that you're limited to half a gigabyte a day. If you have a 100GB hard drive, that means it will take about 120 days to do a complete Carbonite backup (assuming you leave your computer on day and night while uploading the first 50GB). After the first backup job is finally complete, keeping up with relatively minor daily changes should be easy.

Carbonite runs constantly in the background as you use your computer. Because it works so slowly, the bandwidth usage should not slow down other Internet work. However, if you're doing something intensive, such as online videoconferencing, you can temporarily turn off Carbonite. Carbonite also includes various options for deciding what to back up and what not to back up. By default, Carbonite won't touch EXE files, for instance, but you can select individual files to include regardless of the general rules. It also skips large files over 2GB, but you can change that as well.

The speed at which files can be downloaded when it comes time to restore is limited only by the speed of your broadband connection. Carbonite estimates that most users could potentially download 14 to 18GB a day. Restoring individual files takes only a few seconds or minutes, depending on their size.

Files are encrypted as they leave your machine, so no one should be able to snoop while they're in transit. Carbonite keeps keys to decrypt your files, but the company says that these are stored in a secure area inaccessible to the average employee. A totally private key option may be available in the future.

Carbonite is easy to set up and use. The client also adds small dots to files and folders in Windows Explorer to indicate their backup status. For instance, a green dot on a file means it is backed up on Carbonite. A yellow dot means the file is in line to be backed up. No dot means the file is not backed up. This is a quick way to tell whether your backup settings are capturing the files you want to keep safe.

Mozy

Mozy has been around longer than Carbonite but did not offer unlimited storage until Carbonite raised the stakes. Mozy matched Carbonite gigabyte for gigabyte, and since late last year the two have been duking it out with the same basic pricing scheme. Mozy charges $4.95 a month or $54.45 a year.

Mozy offers a free 2GB option that lets you get a feel for the service, and that may be all you need if you're not looking to back up a lot of music, pictures, and videos. The client software sports a clean interface and includes a variety of backup sets such as All Documents (with standard word processing extensions) or All Pictures to

automatically select which files should be backed up. All of that is customizable, so you can back up as few or as many of these files as you like.

Like Carbonite, Mozy's backups run in the background, usually when your computer is idle or free from intensive processor use. That means you probably won't notice Mozy is running. If Mozy seems to be slowing down your computer or Internet connection, the software includes a slider bar to strike a new balance. Move it one way for faster backups, the other way for a faster computer. You can decide what's most appropriate depending on what you're doing. Mozy also includes a scheduling option to control exactly when Mozy backups run. Typically, Mozy says, users will be able to back up between 2 and 4GB a day if they let Mozy run all of the time. It's probably a good idea to let your machine pull some all-nighters when you're starting out.

Mozy supports external disk drives so long as they appear as "fixed" drives in Windows. Unlike Carbonite, Mozy also offers a private encryption key option, which means no one but you can decrypt the files you back up to Mozy. Of course, if you ever lose the encryption key, that's it. Your data is gone. Mozy will not be able to reconstruct it for you. On the other hand, no one else can reconstruct it either, and some security-minded users consider that a good thing.

Restoring files, should you ever need to do it, is simple. Users head to the Mozy Web page, log in, and select files to download. Mozy also offers a DVD of your files sent FedEx for an additional fee. Given the time required to download a large number of files, that might be worthwhile if you encounter a major drive malfunction.

Xdrive

Xdrive works differently than unlimited storage sites like Carbonite or Mozy. Rather than backing up everything slowly, it is designed to handle fewer files much more quickly.

Xdrive includes Xdrive Desktop, a Windows-compatible client that lets you use Xdrive just as you would an external disk drive. Xdrive Desktop appears as a drive in Windows Explorer, which means you can drag and drop files to or from the online storage area. With a good broadband connection, Xdrive can seem like just another network drive.

Storage space is undeniably more expensive at Xdrive than Mozy or Carbonite. Xdrive does offer a free version with 5GB of space, which is more than enough to handle a batch of word processing documents, spreadsheets, checkbook program

Xdrive

✓ Systems Supported
Windows Vista
Windows XP/2000
Windows Me
Windows 98
Mac
Linux

Software Information

	Price	Company	Contact Information	URL
Carbonite	$49.95/year for unlimited storage	Carbonite, Inc.	info@carbonite.com	carbonite.com
Mozy	2GB free; $4.95/month for unlimited storage	Berkeley Data Systems, Inc.	(801) 756-2331	www.mozy.com
Xdrive	5GB free; $9.95/month for 50GB of storage; annual plan available	AOL	N/A	www.xdrive.com
IBackup	$9.95/month for 5GB; economy plans include $49.95/month for 50GB	Pro Softnet Corp.	(800) 949-3555	www.ibackup.com

Scorecard

	Features	Ease Of Use	Installation	Support/Documents	Price	Overall Score
Carbonite	4	4	4	4	4	4
Mozy	5	5	4	4	4	**4.4**
Xdrive	4	4	3	3	3	3.4
IBackup	4	4	3	4	2	3.4

Buying Tips

Decide what you want. Storage sites generally fall into two categories—unlimited space but slow uploading and faster uploading but less space. Slow and steady is fine for full backups you set and forget, but you'll want something faster if you plan to frequently access the files you store.

data, or other important files. For $9.95 a month or the annual plan at $99.50, you can get 50GB of storage, which will easily hold most photo or music collections on top of those documents. If you do choose an option large enough for multimedia files, Xdrive's AutoCopy feature is a good way to make sure they are backed up and available on the Xdrive server. When enabled, AutoCopy automatically uploads any new files in the Windows My Photos or My Music folders. There's nothing for you to do or click to make sure it happens.

Although the desktop client is the most convenient way to manipulate your online files, you can also sign in to Xdrive through the Web on other computers. That way you can view, upload, or download your files from anywhere. It's also possible to share access to files this way with other people. You can define file permissions for specific people and invite them, through email, to view or edit files. They'll need to sign on using a free user ID and password included in Xdrive's notification email. Along with simply sharing files, Xdrive also includes tools such as Xdrive Shows that let you build slideshows with music out of the files stored in your account.

IBackup

In time measured on the Internet, IBackup has been around a while. It seems to compete mainly with Xdrive, although it is aimed more toward the business market.

Like Xdrive, IBackup is faster and more flexible than the cheaper, unlimited storage options of Mozy or Carbonite. IBackup also includes IDrive, a client-side program that maps your IBackup account to a drive in Windows Explorer. You can then use the online storage just as you would a hard drive in your own machine. Web-Manager, a browser interface, provides support for viewing files from any Internet-connected computer. IBackup also includes backup utilities that make it easy to designate a batch of files or folders for regular backups to the online drive. You can select from various predefined sets to automatically back up common files and folders or choose your own. IBackup allows you to stream video and music files from the online server, as well as share files with friends and associates who do not have IBackup accounts of their own. You can even set file permissions so that people you specify can edit the files.

One section of the IBackup Web site you can't help noticing are the pricing options. The cheapest economy storage plan IBackup offers costs $9.95 a month for 5GB of storage, the same amount of disk space that Xdrive gives away for free. Prices go up from there; 50GB runs $49.95 a month, five times the price at Xdrive. Unless you've got an expense account or unlimited mad money, this might be all it takes to send you somewhere else.

Just what does the extra money pay for? IBackup does have a reputation for reliability. The company says that files are stored in datacenters around the world with state-of-the-art security. IBackup also offers some specialized services for businesses, including a toll-free support line which is a relative rarity these days. Overall, however, we didn't see a big difference that would make it worth the additional cost, at least not for the average consumer.

Which service is right for you depends on what you want from online storage. Xdrive and IBackup work essentially as extra disk drives, giving you quick, drag-and-drop flexibility with fast upload/download times and the option to share files. Carbonite and Mozy work much more slowly but offer unlimited space at a relatively low price. If we're talking about true online backups, the Smart Choice award must go to Mozy, for its full backup abilities, ease of use, and private key encryption option. Those who are more interested in fast, flexible file saving and sharing, however, may wish to consider Xdrive. ■

BY ANNE STEYER PHELPS

IBackup

Systems Supported
Windows Vista
Windows XP/2000
Windows Me
Windows 98
Mac
Linux

July 2007
Smart Choice
Mozy

Fix-It Utilities 7 Professional

$49.95; No free trial	
VCOM	
www.v-com.com	
sales@v-com.com	
(800) 325-0834	
Scorecard	
Performance	4
Ease Of Use	5
Installation	5
Documentation	5
Price	5
Overall Score	**4.8/5**

PC Maintenance utilities can avert technological tragedy by keeping your PC in top running order. However, because they make changes to your computer's system files, they also have the potential to render your PC unusable. Consequently, we approach this software category with extreme caution.

Like its peers, Fix-It Utilities 7 Professional has the potential to cause trouble, but it also incorporates safeguards to pluck your PC from the brink of disaster if need be. For this reason, we recommend it heartily as a valuable addition to your maintenance arsenal.

What You Get

The program is a suite of utilities, offering an array of functionality for the price. Among the included tools are a startup-program manager (Startup Commander), a registry cleaner (SystemRegistry), hard drive and removable media checkers (SMARTDiskCheck and MediaVerifier, respectively), hardware diagnostics (PCDiagnostics), and three disk repair and space recovery tools (DiskCleaner, DiskFixer, and JETDefrag).

As a bonus, Fix-It Utilities includes spyware and virus protection (VirusScanner Pro, with technology and one year of free updates from Trend Micro), plus a file manager (PowerDesk 6). A final boon for those who purchase the boxed edition is a recovery CD. (Download purchasers can make one at startup.)

Fix-It Utilities also offers a thorough Help utility that explains features and offers troubleshooting assistance. It also provides valuable advice to keep you on the road to PC health. (Explore the topic The First Time You Start Fix-It Utilities and print out the Emergency Response Manual right away.)

Down To Basics

Many of Fix-It Utilities' tools are so well integrated that you never need to access them individually if your goal is routine protection, maintenance, and repair. Rather, you can work with Fix-It Utilities' wizards (One-Click Solutions), which you access from an option on the main interface.

Fix-It Utilities offers four job-specific wizards—CleanUp, FixUp, Optimize, and Protect. CleanUp deletes unnecessary files, empties your Web cache and Recycle Bin, and clears out extra Registry entries. FixUp checks your hard drive and hardware for problems and repairs broken Registry entries. Optimize defragments your hard drives, and Protect scans for and removes viruses and spyware. A fifth wizard, Comprehensive, handles all these tasks in the most appropriate order.

These wizards are easy to use and only perform operations that should be safe on all systems. However, they are totally automated—don't select them if you like to see or give input on what will happen to your system in advance of the operation.

Advance To Go

To perform deep system cleaning or to use certain utilities, you'll need to explore further. The operations are divided among two main categories—Protection (Anti-Spyware and Anti-Virus) and Maintenance (Diagnose, Fix And Maintain, Optimize, Cleanup, and Recovery). Select an option on the main interface, and you can open any of the tools covered by that category.

At this level, you can get into trouble. Fix-It Utilities knows this, so it scans for suggested changes up front, flagging potentially dangerous changes with yellow and red markers. You can use Recovery Commander to make a system state snapshot before you begin advanced operations. (With Recovery Commander turned on, it will also prompt you every time it senses a changed system state or before you make major system changes.)

In the end, Fix-It Utilities is about as good as a repair and maintenance tool can get. We say this not because it is perfect but because it recognizes that the road to PC health is fraught with danger, and it implements safeguards to protect you along the way. ■

BY JENNIFER FARWELL

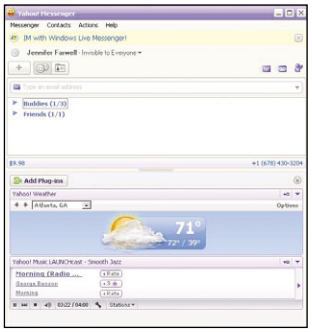
✓ Systems Supported
Windows Vista
Windows XP/2000
Windows Me
Windows 98
Mac
Linux

Stay In Touch

Yahoo! Messenger

Free	
Yahoo!	
messenger.yahoo.com	
help.yahoo.com	
Scorecard	
Performance	5
Ease Of Use	5
Installation	5
Documentation	5
Price	5
Overall Score	**5 / 5**

Systems Supported
Windows Vista
Windows XP/2000
Windows Me
Windows 98
Mac
Linux



IM (instant message) clients are a dime a dozen, and so many of them are proprietary (work only with same-service users) that we normally don't review them here. However, Yahoo! Messenger's offerings are so broad and inviting that we decided to break our rule.

With Yahoo! Messenger, you can IM your favorite Yahoo! and Windows Live Messenger friends. Furthermore, Messenger is deeply integrated with other Yahoo! offerings, giving you access to a slew of features and plug-ins you can add to your Messenger window. For example, from within Messenger you can drag and drop photos and other files (up to 1GB) into IM windows, play Yahoo! games, tune into Yahoo! LAUNCHcast radio station, organize or update your Yahoo! Calendar or Contacts, and much more.

You can also make PC-to-PC phone calls to anyone else who uses Yahoo! Messenger through VoIP (Voice over Internet Protocol). Sign up for Yahoo! Messenger's Phone In feature (about 10 cents a day if you pay month-to-month) and you can obtain a personal phone number and have friends call you from their landlines or mobile phones. With Phone Out, you can call them in return for as little as a penny a minute.

These capabilities require you to have a PC headset, speaker, and microphone or a compatible cordless phone. Call quality depends on the quality of your equipment, but we found it to be excellent with a decent headset (under $100) and a broadband connection.

You'll need a Yahoo! account to sign up for Yahoo! Messenger. Once you're up and running, Yahoo! Messenger Insider will greet you each morning. If you become totally addicted, you can download Yahoo! Messenger for Mobile and stay in touch from your mobile phone. ❚❚

BY JENNIFER FARWELL

Uninstall Thoroughly

Your Uninstaller! 2006 Pro

$39.99; free, 30-day trial	
URSoft, Inc.	
www.ursoftware.com	
sales@ursoftware.com	
Scorecard	
Performance	4
Ease Of Use	5
Installation	5
Documentation	3
Price	4
Overall Score	**4.2 / 5**

Systems Supported
Windows Vista
Windows XP/2000
Windows Me
Windows 98
Mac
Linux

Programs install and update system files, and when you remove them, they don't always exit your system cleanly. Your Uninstaller! 2006 Pro is designed to remedy that.

Uninstaller! offers two modes: Basic and Pro. (We recommend using Pro.) In either mode, Uninstaller! presents a window showing programs and screensavers installed on your system. When you double-click an item (or right-click the item and select Uninstall), Uninstaller performs three tasks.

First, it runs the program's own Uninstall utility. Second, it scans your Registry for entries left behind after program removal. Finally, it scans the program's installation folders for leftovers. It performs these tasks quickly and efficiently.

In Pro Mode, Uninstaller offers a Startup Manager that lets you disable (but not remove) programs that load at startup and a Disk Cleaner tool that removes extra files from your hard drive. It includes Start menu and Internet Explorer menu managers. It also offers an Auto-Fix feature that may be able to repair damaged installations.

Uninstaller! installs quickly and easily, especially considering that it must scan your system for programs. However, documentation is scanty, and Registry entry removal is all-or-nothing. It does offer a backup and restore feature (to restore your Registry if problems arise) but you must remember to do it before each uninstall. We didn't run into problems with the program, but it's possible you might, so treat it with care and use the backup feature. ❚❚

BY JENNIFER FARWELL

Staff Picks

Our Experts Pick The Best Hardware

Western Digital Caviar SE16 500GB

Caviar SE16 500GB
$199.99
Western Digital
(888) 935-8893
(949) 672-7000
www.westerndigital.comxpc.com

A 7,200rpm hard drive may not be the absolute fastest drive you can put into your desktop computer, but it will give you the best balance of capacity, speed, and price. To this end, Western Digital presents the Caviar SE16, available in capacities of 250 to 500GB.

The WD5000KS is a 500GB, SATA (Serial Advanced Technology Attachment) drive. It will work a little faster on a 3Gbps (gigabits per second) SATA connection, but it works just fine on 1.5Gbps SATA, too.

A big 16MB cache buffer keeps recently accessed data temporarily in solid-state memory in case it's needed again soon. No, this isn't the nonvolatile kind of memory found in the new "hybrid" hard drives for notebooks; it's the traditional kind of cache that will still be used in standard hard drives for some time.

Western Digital has made this Caviar quiet and power-conserving, yet also speedy. In our tests, this drive was occasionally faster than a Seagate Barracuda 7200.10 750GB and a Samsung HD501LJ 500GB. HD Tach RW benchmarking software said all three drives average about 67 to 68MBps reading and writing, with 84 to 87MBps maximum rates.

The PCMark05 suite rated the Caviar slightly faster at Windows XP startup, application loading, virus scanning, and general usage, although the Samsung was the fastest at saving files. The Caviar also beat the others in two Iometer trials, which test how well a drive handles concurrent requests from multiple users, as in a server.

Western Digital backs this drive with a one-year warranty. ■

BY MARTY SEMS

COMPUTERS		
Desktops <= $1,500 Venture DH43I $799.99	Josh Systemax www.systemaxpc.com	*This family PC, which includes a basic keyboard and mouse, has enough power to handle day-to-day computing. It also offers plenty of USB 2.0 and FireWire ports.*
Desktops > $1,500 Force Recon QXN $2,449	Josh Vigor Gaming www.vigorgaming.com	*If you're looking for a gaming system that will make your grandkids' eyes pop, this PC will do the trick. It has style and power.*
Notebooks <= $1,500 Satellite A205-S4577 $1,408 (as configured) $999.99	Jennifer Toshiba www.toshibadirect.com	*This new laptop comes with Vista, an Intel Core 2 Duo Processor, 1GB of RAM, and more. For under a grand, it has all the right specs.*
Notebooks > $1,500 ThinkPad X60 Tablet with MultiTouch $2,209	Jennifer Lenovo www.lenovo.com	*On sale for under $1,859 at press time, this tablet will keep you going when you're on the go. With its MultiView/MultiTouch screen, you can work outside or inside.*
HANDHELDS		
Smartphones & PDAs (personal digital assistants) Cingular 8525 $599.99	Jennifer Cingular www.cingular.com	*After discounts and a two-year contract, this well-rounded phone costs just under $400. You'll get the functionality of a phone, camera, broadband-like Internet, and a mini-computer in the palm of your hand.*
INPUT DEVICES		
Keyboards Wireless Laser Desktop 4000 $79.95	Blaine Microsoft www.microsoft.com	*This new Vista-flavored keyboard-laser mouse (Laser 5000 mouse) combo includes a new Comfort Curve design and integrated buttons (Start, Gadget, etc.) for immediate access to Vista and Windows Live.*
Mice/Trackballs/Trackpads Microsoft Laser 5000 $49.95	Blaine Microsoft www.microsoft.com	*A great Magnifier tool, four-way scrolling wheel, and Tilt Wheel are just a few of the niceties you'll find in this extremely comfortable mouse.*
MONITORS/DISPLAYS		
CRTs (cathode-ray tubes) AS700-BK $129.99	Andrew NEC www.necdisplay.com	*If you've got the desk space and prefer the superior color reproduction of CRTs, this model pleases without emptying your pockets.*
LCDs <= 19 inches 740N $189.99	Andrew Samsung www.samsung.com	*From what we've seen of this display, it's an affordable and vivid 17-inch LCD worth looking into.*
LCDs > 19 inches VX2255wmb $429	Andrew ViewSonic www.viewsonic.com	*This Vista-compliant 22-inch widescreen HD LCD looks sharp and offers a 5ms response time for displaying games and movies at their best. You also get a built-in 1.3MP (megapixel) Web cam.*

Microsoft Wireless Laser Desktop 4000

Wireless Laser Desktop 4000
$79.95
Microsoft
(800) 642-7676
www.microsoft.com

The Laser Desktop 4000 keyboard-mouse combo is all about accessing information quickly. Integrated keyboard buttons include Web/Home; Gadgets (weather, stock, etc.); Mail; and five My Favorites buttons to configure with URLs, folders, etc. The keyboard, which uses Microsoft's excellent Comfort Curve design, also has a Zoom lever and dual-action Function keys that can execute printing, spell checking, etc. The combo's stellar Wireless Laser Mouse 5000 (1,000dpi [dots per inch] resolution; 6,000fps [frames per second] precision) uses Intelligent Tracking System technology and includes an Instant Viewer function to display all open windows. The 5000's Tilt Wheel also provides four-way scrolling. A Windows 2000, Windows XP, or Vista OS (operating system), along with four batteries and 27MHz RF (radio frequency) technology, power the combo up to 6 feet from its receiver. ❚❚

BY BLAINE A. FLAMIG

PRINTERS

Inkjet <= $150 Stylus Photo R380 $129.99	Kylee Epson www.epson.com	*This printer features a 3.5-inch color LCD for previewing photos and navigating menus. You can also print directly to printable CDs and DVDs.*
Inkjet > $150 PIXMA iP6700D $179.99	Kylee Canon www.usa.canon.com	*With its 3.5-inch color LCD, you can preview your photos before you print. In addition, the iP6700D supports double-sided printing.*
Laser <= $200 ML-2571N $199.99	Nathan Samsung www.samsung.com	*This monochrome laser has a compact design, is easy-to-use, and churns out 25ppm (pages per minute).*
Laser > $200 to $500 HL-4040CN $399.99	Nathan Brother www.brother.com	*This color laser has features typically found on more expensive models, including a print speed of 21ppm in both color and monochrome, an output quality of 2,400 x 600dpi (dots per inch), and built-in Ethernet connectivity.*
Laser > $500 Phaser 4510/N $999	Nathan Xerox www.xerox.com	*With 128MB of memory, a 533MHz processor, a 700-sheet paper capacity, and a print speed of 45ppm, this monochrome laser can zip through the most complex print jobs.*
MFDs (multifunction devices) Stylus Photo RX580 $149.99	Kylee Epson www.epson.com	*This MFD is easy to set up, easy to use with its 2.5-inch LCD, and features Epson's new Claria inks that are designed to keep prints color-rich even as time passes.*

STORAGE

Flash Memory & Portable Flash Voyager 16GB $299	Marty Corsair www.corsairmemory.com	*The Flash Voyager USB drive boasts an astounding 16GB, plus 256-bit AES (Advanced Encryption Standard) and a 10-year warranty.*
CD & DVD Drives LH-20A1H About $50	Marty Lite-On us.liteonit.com	*20X DVD±R writing is the highlight of this LightScribe-capable burner.*
Hard Drives Deskstar 7K1000 1TB $399	Marty Hitachi www.hitachigst.com	*The first terabyte (about 1,000GB) hard drive is almost as speedy as a Western Digital Raptor, but with nearly seven times the capacity. Also available with 750GB.*

VIDEO/PHOTO

Digital Camcorders < $500 Handycam DCR-HC38 $329.99	Nathan Sony www.sony.com	*This digital camcorder features a 40x optical zoom and infrared capture mode for nighttime recording; pretty impressive for less than $350.*
Digital Camcorders > $500 Everio GZ-HD7 $1,699.99	Nathan JVC www.jvc.com	*Besides being able to record and play back your home videos in 1080i, this digital camcorder utilizes three charge-coupled devices and features the same Fujinon lens JVC puts into its broadcast-quality HD video cameras.*
Digital Still Cameras - Point & Shoot PowerShot A640 $399.99	Kylee Canon www.usa.canon.com	*This 10MP camera features 4X optical zoom and a 2.5-inch LCD. This is an ideal camera for those who prefer to use AA batteries.*
Digital Still Cameras - Adv./Prosumer D40 D-SLR About $600	Kylee Nikon www.nikon.com	*The 6.1MP D40 mixes friendly operating controls with shooting abilities that go beyond point-and-shoot.*
Graphics Cards <= $150 Radeon X1900GT $129.99	Andrew Sapphire www.sapphiretech.com/us	*This card is one of the best mainstream graphics cards you can buy. At least until the R600-based cards come out.*
Graphics Cards > $150 GeForce 8600 GTS OC About $230	Andrew BFG www.bfgtech.com	*In our tests, this card showed promising performance in most DirectX 9 games we tested. If you're a gamer on a budget looking for a DX10-capable card, then you can't go wrong.*

Make Windows XP More Convenient

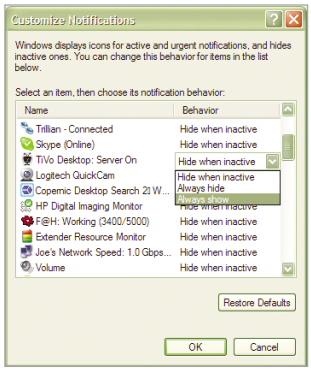
All of the fanfare surrounding the launch of Windows Vista the past several months is almost enough to give a Windows XP system an inferiority complex. Although you can't get it with a new system anymore (at least, not very easily), WinXP has a lot of life left in it and isn't going anywhere soon. So this month, we've assembled a collection of interface and usability tips that can help make using your trusty old WinXP system a little more convenient and efficient.

Bypass The Recycle Bin

Want to delete a large file that you're sure you'll never need again? To permanently delete the file so that it doesn't take up space in your Recycle Bin, hold down SHIFT while you delete it.

Caps Lock Alert

Have you ever typed something on your keyboard and then looked up at the screen to find you messed things up by inadvertently pressing the CAPS LOCK key somewhere along the way? WinXP's ToggleKeys feature can play an audible warning—alas, only out of your PC's internal speaker—whenever you press CAPS LOCK (it works for NUM LOCK and SCROLL LOCK, as well). To activate ToggleKeys, go to Start, Control Panel, and Accessibility Options and check the box labeled Use ToggleKeys. (Another way to turn ToggleKeys on and off is to hold down NUM LOCK for five seconds.)



You can force Windows XP to show or hide certain icons in your System Tray.

Change WinXP's Registered Owner/Organization Info

There may be times when you want to edit the registered owner/organization information on a WinXP system. (Perhaps you bought a used system, or you made a typo when you first entered your info.) To change it, click Start and Run and type **REGEDIT**. Then go to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion. Then, double-click the RegisteredOwner and Registered Organization entries to change them.

Check System Up Time

Ever suspect that your system might have rebooted itself while you were away? To see how long your computer has been running, type **systeminfo** from a command prompt window. Scroll up near the top and you'll be able to view the System Up Time, which is displayed right under the date that Windows was originally installed. (*NOTE: This information isn't available from WinXP's graphical System Info utility found within Accessories/System Tools.*)

Clean Up Or Customize The Desktop

Want to tidy up your Desktop? If you right-click the Desktop, choose Arrange Icons By, and then remove the check mark next to Show Desktop Icons, you'll make all of its icons disappear. (To get them back, just repeat the process and add the check mark.)

You can also customize which of the standard Windows icons will appear on the Desktop, as well as how they look: Right-click the Desktop and then click Properties, the Desktop tab, and the Customize Desktop button. Here you'll be able to select which icons you want to appear (My Computer, My Network Places, My Documents, and Internet Explorer) and change the default icon for most (you can't do it for Internet Explorer, but you can for the Recycle Bin).

Control The System Tray

If your system is like most, your Taskbar's System Tray is filled with so many icons that you can't see them all without expanding it. While WinXP manages these icons and automatically hides those that it deems inactive, you can also force it to always hide or always show the icons of your choice.

To do this, right-click the Start menu, select Properties, and then click the Taskbar tab. Then click the Customize button, and you'll see a list of all your current and past Taskbar icons. The majority of these will be set to the default Hide When Inactive, but if you click the setting next to an item, you can change it to Always Hide or Always Show.

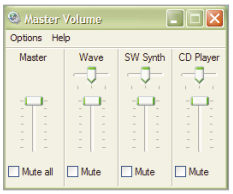
Customize Your User Account Picture

WinXP gives you several generic images that you can use when creating a user account (the frog, snowflake, etc.). But did you know you can use your own custom image instead?

In the Control Panel, click User Accounts, select an account, and click Change My Picture. While on the picture selection page, click the Browse For More Pictures link. Then choose any image on your hard drive, and WinXP will make it your account picture. To avoid distortion, it will also retain the aspect ratio of the original (which can result in a smaller than normal image), so for best results you should use a relatively square image or use an image-editing tool to crop one to a square in advance.

Ditch The WinXP Startup Screen

Starting up WinXP can feel like it takes an eternity, but you can usually save a few seconds by disabling the WinXP logo and progress bar that automatically appear during the process. To do so, launch MSCONFIG from the Run dialog box and then click the BOOT.INI tab and put a check mark in the box labeled /NOGUIBOOT.



You can put Windows XP's volume control on a diet by pressing CTRL-S while it's open.

Make Your Own Application Toolbar

For easy access to a group of frequently used programs, you can create a Taskbar-based Toolbar for them. First, create a new folder on the Desktop (or anywhere else) and fill it with shortcuts to the programs you want. Then, right-click the Taskbar, select Toolbars, and New Toolbar. Specify the folder you just created and then all the shortcuts will be conveniently available right from the Taskbar.

No Names, More Thumbnails

When you're looking at a bunch of image thumbnails, filenames seem almost superfluous. You can eliminate the display of filenames (and thus leave more space for the thumbnails) by holding down the SHIFT key while opening or switching to a thumbnail view. To restore filenames, just repeat the process.

Pin Items To The Start Menu

Want to put a favorite application on the top of the Start menu? Right-click the application's program or shortcut icon (it could be in Windows Explorer, on the Desktop, or deeper within the Start menu) and select Pin To Start Menu. This will put the program at the top of the Start menu, and the link will remain valid even if you relocate the original file or shortcut. (*NOTE: This only works with applications, not documents.*) To remove an icon from the Start menu, right-click it and choose Unpin From Start Menu.

Set Up An Icon To Lock Your Computer

You probably know that you can lock your computer and return it to the login screen by holding down the Windows key and pressing *L*. But you can do the same thing without the keyboard by creating a shortcut to the lock command that you can conveniently place on your Desktop or Start menu.

Right-click the Desktop and select New and Shortcut. When prompted for the location of the item, type **rundll32.exe user32.dll, LockWorkStation** (make sure you include the capital letters). From now on, you'll be able to lock your system by double-clicking the shortcut.

Slim Down The Volume Control

If you regularly keep WinXP's volume control open, you've probably noticed that it takes up a lot of space. Here's how to reclaim some of it: Open the volume control, make sure it's highlighted, and then press CTRL-S. The new version will be about half the size of the original but still retain almost all of the controls.

Quick Access To Windows Explorer & More

A speedy way to access Windows Explorer without clicking through multiple menus is to hold down the Windows key and press *E*. Explorer will appear. You can use similar keyboard shortcuts to launch the Run dialog box (Windows-R), access System Properties (Windows-PAUSE/BREAK) or to immediately minimize all open windows (Windows-M).

Reclaim Some Hard Drive Space

If you browse your Windows folder with the Show Hidden Files option turned on (click Tools, Folder Options, the View tab, and then select Show Hidden Files And Folders), you'll likely see scores of folders with similar names that start with $NTUninstallKB or $NTServicePackUninstall. These are uninstall folders for service packs and various OS (operating system) updates that WinXP installs over time (assuming you regularly update your system or have it done automatically).

Cumulatively, these folders can consume hundreds of megabytes on your hard drive, but they can be deleted as long as you don't plan to uninstall any of the updates. To be on the safe side, you might want to first view the folders sorted by date and retain updates from the last month or two (if you find one is causing a problem, you'll want the option of uninstalling it). Also, don't delete the hf_mig folder, because future updates may need information it contains. ▮

BY JOSEPH MORAN

Best of Both Worlds

Dual-Boot Windows XP & Vista

Upgrading an operating system is always daunting. You never know exactly how the new system will work, and you can't be sure whether existing hardware and software will function in the new environment. Thankfully, those inclined to caution have a dual-boot option. Dual-booting sounds like an elaborate process, but it's really rather simple. Just install two operating systems and, each time you boot up, choose which to use. Dual-booting is a great way to try out a new OS (operating system) or gradually ease your way into the transition. And if some key system components aren't yet compatible with the new version, you retain the option of flipping between the two. The process isn't difficult, though it can take some time and has a tricky step or two. We'll walk you through it.

Preparation

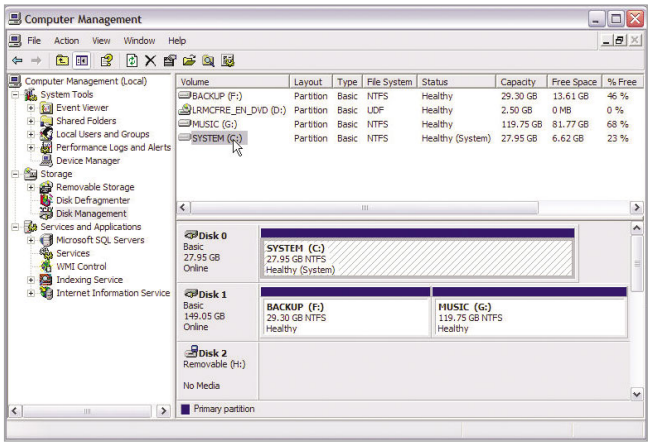
Before installing a new OS or making any significant system changes, back up existing data to external or portable storage. If something goes terribly wrong and forces you to reinstall one or both operating systems, you don't want to lose your data, as well. Next, collect your installation CDs (or system recovery discs) from your original system. Include your Windows disc just in case, plus any key applications and drivers you want to use in the new OS. Your computer will treat each OS as a separate system, so you'll have to reinstall everything during the new operating system's setup.

We'll focus on adding Windows Vista to an existing Windows XP installation. Adding WinXP to a new Vista system is possible, but it's more difficult and less reliable than installing the newest OS last. Either way you do it, though, you'll need to make sure your hardware is Vista-capable (take a few minutes to download Microsoft's Vista Upgrade Advisor at www.microsoft.com/windowsvista/upgradeadvisor) and that you have a valid Vista license and installation DVD. You can dual-boot from any of Vista's main versions, though you'll need a full (rather than an upgrade-only) license. Our "Non-Windows Dual-Booting" sidebar discusses adding Linux or OS X to either a WinXP or a Vista system, though we'll focus on dual-booting just WinXP and Vista together.

Before installing a new OS or making any significant system changes, back up existing data to external or portable storage.

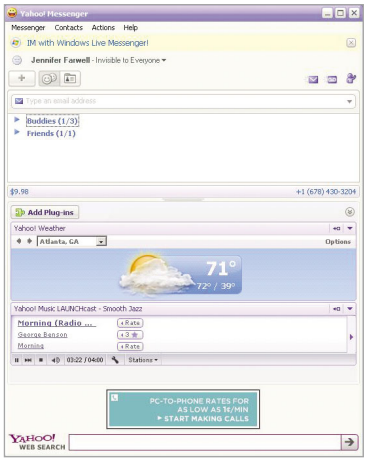
Installation

The first thing a dual-boot OS requires is its own drive. In other words, you can't have both WinXP and Vista installed on your C: drive. A second physical hard drive works perfectly, if you have one or want to acquire one, but you can also partition a single hard drive into multiple virtual drives. Each partition receives its own drive letter and can have its own boot record. Review your existing drive structure with WinXP's Disk Management tool. Right-click My Computer and choose Manage from the menu. Select the Disk Management entry under the Storage group in the resulting Computer Management dialog box. If you have an existing partition with more than 40GB of free space, you can use it to install Vista.



Windows XP's built-in tools may help you identify open drives for installing Vista, or you may need to use commercial software tools to create a new partition.

Otherwise, either add a new physical hard drive or use partitioning software to split off part of your C: drive. Norton's PartitionMagic ($69.95; www.symantec.com) and Acronis' Disk Director Suite ($49.99; www.acronis.com) are mainstays, but GParted LiveCD (gparted.sourceforge.net/livecd.php) is free and creates a simple CD you can boot from. Follow the software's instructions to the letter—repartitioning can be risky—and create a primary partition with at least 40GB of space for Vista and the same file system (preferably NTFS [NT File System]) as your WinXP installation.



Holding off on letting Vista activate gives you 30 days to try the OS (operating system) without locking your key to your current hardware profile.

Once you have a clear partition, you have the same choices as when installing Vista on its own. Start by disabling any antivirus and antispyware applications. Next, either insert the Vista disc or restart and boot directly from the Vista DVD. You may need to enter your BIOS (Basic Input/Output System) settings (pressing DELETE or F2 at startup usually launches the Setup utility) in order to set the optical drive as the primary boot device. When booting from the disc, Windows requires language and location settings before continuing to the installation wizard.

Take a few moments to review the information provided via the What To Know Before Installing Windows link before proceeding to click Install Now. Enter the Vista product key printed on a yellow sticker affixed to the disc's packaging. If you're dual-booting as a trial of Vista's functionality and compatibility, uncheck the Automatically Activate Windows When I'm Online option. You'll have to activate within 30 days or lose key functionality, but you essentially get a month-long trial for the OS without having to worry about matching up or resetting hardware profiles if you decide to upgrade the whole system. Accept Microsoft's licensing terms and click Next.

If you launched the installation wizard from within WinXP, make sure to choose Custom Install rather than Upgrade. If you boot from the DVD or don't have the appropriate mix of WinXP and Vista versions, Vista will require a Custom install. Next, be careful to direct Vista's installation program to your clean partition (the empty drive) rather than to the drive on which WinXP resides. Click Next to begin the installation in earnest. Vista will run most of the installation on its own, rebooting as necessary.

Take a break, but don't go too far. After anywhere from 30 minutes to three hours, depending on your hardware, Vista will need a few more minutes of your time. Create an administrator account, enter a computer name, accept the default Windows Protection settings, set the date and time, choose your network location, and click Start. After Vista gets going, take some time to install your other software, including antivirus and antispyware applications compatible with Vista. You may need to visit your hardware manufacturers' Web sites to download updated drivers, as well.

Configuration & Management

Vista's updated Windows Boot Manager should load each time you start the computer, asking which OS to boot into. For some reason, the Boot Manager isn't able to detect exactly what those OSes are, however, so you'll have to remember that Earlier Version Of Windows means WinXP. When you highlight the Microsoft Windows Vista option, you can press F8 to enter Windows' Advanced boot menu and choose among Safe Mode, Last Known Good Configuration, or other options.

The Boot Manager displays its options for 30 seconds by default before booting into Vista if you

Back It Out

If dual-booting isn't for you, or if a few weeks of switching back and forth is enough to convince you to take the full Vista plunge, you can remove a dual-boot setup in a few easy steps.

Boot into Windows XP (the Earlier Version Of Windows option from the boot menu) and insert your Vista DVD.

Select Run from the Start menu and type **e:\boot\bootsect.exe /nt52 ALL /force** into the command line. Replace the E: drive in our example with your DVD drive's letter if it's different. Click OK. This step is crucial—without it, you'll continue to see the boot loader option, even if you uninstall Vista and remove its partition.

Reboot. The boot menu will be gone, and you'll return directly to WinXP.

Reformat the drive or partition containing Vista, either using WinXP's drive tools (from My Computer) or the software you used to create the partition originally.

If you installed Vista on a separate partition of WinXP's physical drive and have dedicated partitioning software, you might want to recombine the two in order to maximize your primary hard drive's space to meet Vista's increased capacity requirements.

Non-Windows Dual-Booting

You can dual-boot with a Linux or OS X installation and Windows (and even create triple- and quad-boot options), but there are some considerations and differences.

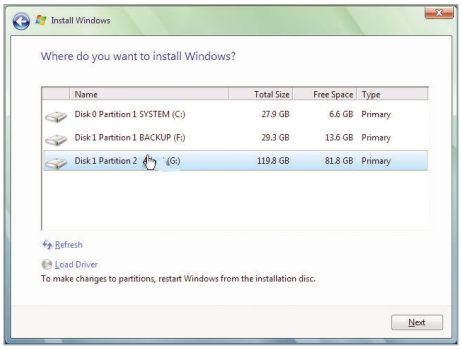
Linux distributions often come in downloadable ISO formats, rather than on physical discs. You'll have to use CD/DVD software to burn discs from the ISO files onto physical media in order to install the OS (operating system) on its own partitions.

Make sure to prepare separate preparations for each OS you plan to install, either at drive setup or afterward with partitioning software.

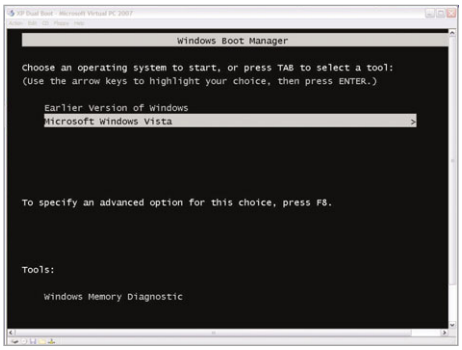
Linux distributions have slightly different boot loaders than either Windows XP or Vista, though al-most all include GRUB (Grand Unified Boot Loader), as well. Install Linux after any (or all) Windows operating systems and configure their boot loaders as per the documentation available with the distribution and through online help resources.

There's no supported way to install OS X on regular PC hardware, but Apple's Boot Camp software will let you dual-boot between OS X Tiger v10.4.6 or higher and WinXP or Vista. ❙

don't select an option. To adjust those settings, boot into Vista and open the Windows Control Panel. Choose the System And Maintenance category and click the System module. Select Advanced System Settings in the left task pane and then, under the Advanced tab, click the Settings button in the Startup And Recovery section. The top System Startup area displays the default OS and the time to display those choices. Choose the desired default from the drop-down menu and adjust the timing, if necessary, keeping the checkbox next to the time option selected. Commercial software tools provide even greater control over Vista's boot options. VistaBootPRO, from PROnetworks (free beta; www.vistabootpro.org), provides a safe and easy-to-use interface for manipulating Window's deeply buried boot options. You can adjust the names presented for each OS, remove the Vista dual-boot option with a single Change Settings adjustment, or make a WinXP-over-Vista setup work.



After choosing to perform a Custom install, point Vista to the open partition or drive you identified.



Each time you boot up, choose between using Windows XP or Vista

As long as the Vista and WinXP file systems are both formatted with NTFS, you'll be able to share data files—including the contents of My Documents, multimedia files, and other data folders. Note, however, that Vista always treats its own partition as the C: drive, so when you boot into the new OS, you'll find your WinXP and Vista drive letters reversed.

Vista can use your existing WinXP My Documents folder if you right-click the Documents option in Vista's Start menu and select Properties. Click the Location tab in the Documents Properties dialog box and click Find Target. Browse to WinXP's My Documents location, remembering that Vista sees its own partition as the C: drive, so WinXP files and folders will probably appear under D:. Creating other shortcuts provides easy access to files and folders across the operating systems, though separate data storage drives can be accessible from both systems. Simply navigate to the appropriate drive letter for the file system in either OS (using My Computer in WinXP and Computer in Vista) and browse directories for the files you need.

Dual-booting can be a convenient and effective way to retain the best of both old and new operating systems. You don't have to jump into Vista with both feet until you're ready, and it can extend the useful life of legacy WinXP hardware and software. It doesn't take any more time than upgrading your system completely and provides tremendous benefits. ❚❚

BY GREGORY ANDERSON

Under My Thumb

The War For Control Of Your Media

Analog electronics used to own the multimedia industry, but their days are coming to an end. VCRs have made way for DVDs, audio tapes have been annihilated by CDs, and while film cameras are still available, home computers have made photo-editing, storage, and sharing so convenient that most people opt for digital models.

This represents a big win for consumers, who now have the power to manage and share their multimedia in any number of ways, but the Digital Age has become a perfect storm for multimedia content producers. Imagine what would happen to Ford if you could take a cheap gadget to your neighbor's house that created a perfect replica of his Mustang at no additional cost to you. Or, what would happen to the diamond industry if you could throw some carbon into your printer, download a file containing your favorite cut, and print your own 3-carat engagement stone? Farfetched as these scenarios seem, the issues they pose are exactly the same as those faced by the multimedia content producers, who are turning to increasingly desperate measures to control copyrighted content that somehow always seems to break free.

Understanding why this is such a thorny issue requires an understanding of the true benefits digital content provides to consumers, consumer rights, and what multimedia content producers are doing to curtail the use of what, on the surface, appears to be your media.

From Waves To Ones & Zeroes

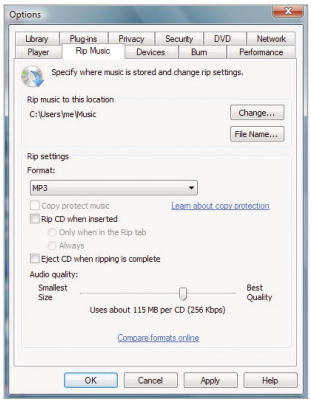
Digital technology is often advertised from a quality perspective, comparing new digital technologies to older analog technologies, but this focus is largely inaccurate and misses the real point. It's true that digital CDs can sound superior to analog audio tapes, and DVDs look much better than analog VHS tapes. But because the sounds we ultimately hear are analog (in the form of sound waves) and the things we see are analog (in the form of light waves), turning it into a digital signal always requires conversion that represents a downgrade in overall quality compared to the original, real-life source. Some people firmly believe that images from film cameras are still superior to images from digital cameras, for example.

The real advantage of digital over analog is that digital files are so much easier to manipulate and duplicate. Once the conversion process to digital is complete, the resulting file can be copied as many times as you wish, and each copy is absolutely identical to the source file. Digital data can be converted to various other formats to conserve a lot of storage space without sacrificing much quality. MP3, for example, is just one of many digital audio formats that digitally compresses audio files to take up less space. A standard CD that holds about 70 minutes of CD-quality audio can store about 10 times that amount of audio if the files are converted to MP3 or another compressed digital format.

A secondary benefit to digital multimedia files is that they can be "tagged" in a number of ways, making them very easy to organize. DVD menus that let users access any scene they like are good examples of this, as are MP3 tags that let users label each individual track with a title, artist, genre, lyrics, and other helpful information.

Storage space used to be a problem when blank CDs and CD recorders

were expensive and the best consumer hard drives held only a few gigabytes of data, but those days are over. Inexpensive hard drives are available that store hundreds of gigabytes, and now blank DVDs and cheap DVD recorders make it possible to store nearly limitless quantities of movies, music, pictures, and other files long-term for around 25 cents per DVD.



Anyone with Windows can make perfect copies of his digital music using the operating system's built-in tools, but beware if you want to share.

Enter The Internet

All the storage space in the world doesn't do you any good unless you have files to store there, and in the past it was difficult for people to share copies of their music, movies, and other multimedia with others. Now, the Internet—coupled with some very powerful utilities—has opened up endless possibilities in this area.

There are direct-download Web sites, generally based in countries such as Russia where copyright laws range from nonexistent to minimal-but-rarely-enforced, in which users can simply search for files they want and download them straight to their hard drives. Another example is peer-to-peer networks, in which your computer is temporarily directly connected to another user's computer just long enough to download or share a particular file. However, the popularity of peer-to-peer networks has been eclipsed by a much more sophisticated technology—BitTorrent.

BitTorrent sites are the unscrupulous consumer's dream and the content producer's nightmare. All users need to do is download one of the many freely available BitTorrent download clients, open a BitTorrent directory site in their Web browser, and they have instant access to every multimedia file imaginable: entire seasons of television shows; currently released DVDs, audio tracks, and albums; and nearly every piece of software ever created. In the past, large video files generally had to be divided into several chunks, with end users slowly downloading each chunk and then using a separate utility to reassemble the entire video, but BitTorrent technology excels at making it easy to download files regardless of their size. It works by having multiple users each download separate portions of one big file, and then letting them download the portions they don't have from each other in peer-to-peer fashion. This lets the users provide the bandwidth necessary for sharing many large files, eliminating the prohibitive cost of providing so much bandwidth from a single download location.

While BitTorrent sites make it possible to share nearly limitless quantities of multimedia on a global scale, the availability of online storage services has made it easier than ever for individuals to share multimedia with a select group of friends and family members who share their particular tastes. A good example is AMD LIVE! Media Vault (amd.streamload.com), which offers 25GB of free online storage. That's enough space to store more than 8,500 3MB digital photos, more than 303 hours of high-quality MP3 digital audio tracks, or several DVD movies; and even more space is available for a monthly fee. The site automatically sorts uploaded content into separate music, video, and image folders, and people who have permission to access the account are free to download anything they like. However, users should use caution in selecting these services, because many sites that promise nearly unlimited multimedia content for a monthly fee are actually scam sites that are making you pay to access illegal BitTorrent links that you could access on your own free.

ALLOFMP3.com (allofmp3.com) gets away with charging little to nothing for copyrighted music by being based in Russia, where copyright laws are nearly impossible to enforce.

The Flipside

While the move from analog to digital is empowering to consumers, it is terrifying to people who make their livings from music, movies, and other media. The question of whether it's legal to make digital copies of your digital multimedia for personal, noncommercial use is still up in the air thanks to vague language used in—and ongoing lawsuits revolving around—1992's Audio Home Recording Act and follow-up legislation such as 1998's Digital Millennium Copyright Act. Regardless of what side you come down on regarding this issue, however, sharing copyrighted music or movies with people who haven't bought the content is never legal. (Just ask one of the thousands of people sued for music swapping by the Recording Industry Association of America.) Theft of this sort used to be limited to a few people swapping bootleg tapes, but

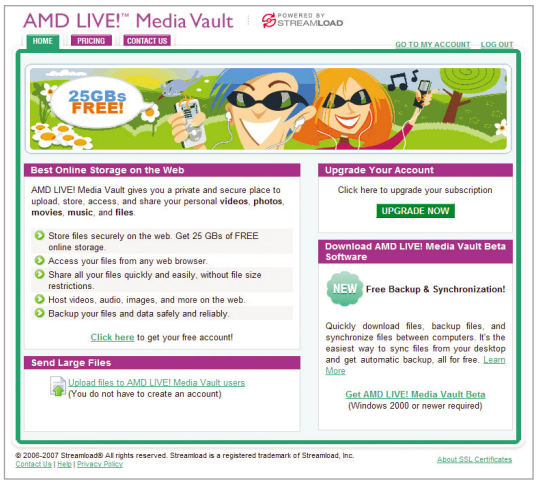
now anyone with a home computer and an Internet connection has access to nearly every multimedia file ever produced, with quality that ranges from mediocre to identical copies of the original source material.

The response from the affected multimedia industries has come in the form of DRM (digital rights management) technology, coupled with increasingly strict EULAs (End-User License Agreements) and TOS (terms of service) agreements designed to prevent the copying and sharing of multimedia content.

DRM goes way beyond simple copy protection, letting content providers control every aspect of every single file. They can program the DRM so that a song or movie only plays a certain number of times or on a specific playback device or so that usage is restricted in any number of ways, depending on the type of service the content provider wants to supply and the type of service the customer paid for. The main problem this poses for consumers is that DRM technology is proprietary, so companies must agree to license their DRM schemes to one another if they want to allow the same content to play on each company's devices. This rarely happens, and that's why songs from Apple's iTunes Store only play on Apple's iPods, while songs from Microsoft's Zune Marketplace will only play on Microsoft's Zunes, for example.

Unfortunately for the multimedia industry, EULAs are easy to ignore, and nearly every form of DRM can be cracked, sometimes with relative ease, by the same community of computer hackers who have cracked computer software for decades. **Cracking** is the process of stripping away files or circumventing mechanisms designed to restrict the usage of a file so that the original file—be it a program, song, or movie—remains intact, but its usage is unrestricted. FairPlay, the DRM technology that Apple uses to restrict the usage of songs sold through the iTunes Store, is a prime example. It has been cracked multiple times, letting users who apply the crack remove FairPlay from their music downloads and play the files on any digital audio player.

When a particular type of DRM is cracked, a company has to create a new variant, apply it to their entire catalog, and upgrade every authorized computer and playback device so it can decode the new protection scheme. It then must immediately start working on yet another variant in a vain attempt to stay one step ahead of the crackers. This process costs money, which results in higher prices for consumers and also hurts the credibility of the digital audio service, increasing the likelihood that affiliated artists will pull their songs, new artists will refuse to join, or that lawsuits regarding lost revenue may flare up. None of these outcomes benefits consumers.



Web sites such as AMD LIVE! Media Vault let users store gigabytes' worth of multimedia files free.

A few companies have tried to sidestep these DRM issues by ignoring them completely, relying on the goodwill of their customers to prevent rampant copying. The best example is the eMusic digital audio download service (www.emusic.com), where subscribers pay a flat monthly fee to download a fixed number of audio tracks. Each track is stored in DRM-free MP3 format, and eMusic lets users copy the tracks to any number of computers, portable digital audio players, or any other playback devices. It's still illegal to send copies to your friends, and many major labels refuse to add their songs to eMusic's catalog, but consumers looking for as few restrictions as possible are attracted to DRM-free services such as eMusic.

The movement to abandon DRM picked up steam on Feb. 6, 2007, when Apple co-founder and CEO Steve Jobs issued his "Thoughts On Music" essay. In the essay, Jobs claims that it's the music studios, not Apple, who champion DRM, and he points out that the studios sell billions of DRM-free tracks each year in the form of CDs, yet require relatively draconian DRM policies for downloadable tracks. You can read the full text at www.apple.com/hotnews/thoughtsonmusic, but don't expect the major studios to adopt a DRM-free stance anytime soon. The four major labels—Sony BMG, EMI, Universal, and Warner Music—all responded negatively to Jobs' proposal, countering that Apple should work on licensing FairPlay so it can be used on players other than the iPod instead of pushing for the abandonment of DRM.

Legal vs. Moral

It's safe to say that DRM isn't going away any time soon and that the global reach of the Internet will continue to make it easy to illegally download multimedia while simultaneously making it practically impossible for regulatory agencies and multimedia industry lawyers to enforce the law. And until those laws regarding what we can and can't do with our personal digital multimedia are finalized, your only true guide is your conscience.

BY TRACY BAKER

How To Transfer VHS Tapes To DVD

With Or Without Your PC

In this article, we'll describe two methods of transferring video from a VCR to DVD. Both of them require some special equipment.

The easier method costs more. It involves using a standalone video capture/DVD-burning device instead of your PC. The traditional process involves transferring your video to your computer, editing it in software, and burning it to DVD with a DVD±RW (rewriteable) drive. You'll need blank media such as DVD+R (recordable) or DVD-R discs for either method.

There's a lot of ground to cover for this topic, so we'll get started. Note that you may not be able to copy some prerecorded movie tapes.

Sony DVDirect For Standalone Transfers

We talked about Sony's DVDirect VRD-MC3 ($249.99; www.sonystyle.com; for Windows 2000/XP SP2 if connected to PC) in the March issue of *Smart Computing* on page 17. This standalone device can capture video and burn it to DVD without computer assistance.

To start using the DVDirect, plug in its AC power adapter. Your VCR or local electronics store may have the audio and video cables you'll need to connect your VCR's audio and video outputs to the DVDirect's inputs, as the DVDirect doesn't come with a complete set. RCA-type stereo audio cables generally have red (right) and white (left) plugs, while an RCA-style video cable may have yellow connectors. If your VCR has an S-Video port, however, use that type of video cable instead for higher image quality.

Turn on your VCR and the DVDirect. Insert a tape into your VCR, but press the Stop button if the tape starts to play. Press the DVDirect's Eject button and insert a blank DVD. We recommend using write-once DVD-R or DVD+R media, but you can also make longer DL (dual layer) or rewritable DVD+RW discs that will be playable in most consumer players. (DVD-RWs aren't compatible with many players.) Press the DVDirect's Eject button again to close its tray.

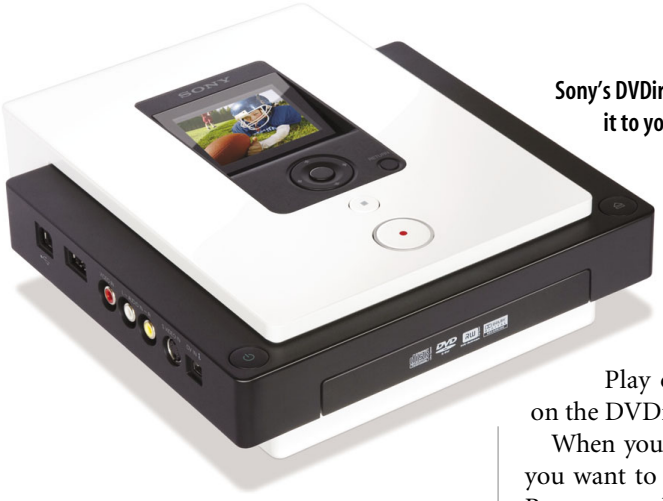
When the DVDirect's screen says Complete, press the Return button. The Menu will appear. Directly below the screen is a directional wheel with arrows pointing up, down, left, and right. You'll use these to navigate the DVDirect's menus. Press the button in the center of the wheel to select the currently highlighted option.

Press the down arrow on the directional wheel until you reach the Setup option, and press the center button to select it. There are a few settings to check in Setup. If you know how long your VHS tape's video runs, you can set the DVDirect to automatically stop recording after a certain amount of time by selecting Auto Stop Timer. Here you can choose among preset durations from 30 minutes to 8 hours. The time you select here can affect the quality of the video the DVDirect will write to your DVD, as the DVDirect will automatically adjust the compression of the video to fit the space available on the media. For instance, the DVDirect will write a long program at a lower quality level to fit on a disc. It can fit about one hour of the highest quality video setting (HQ) on a typical 4.7GB recordable DVD.

If you'd rather stop the DVDirect's recording yourself after the video ends, set the video quality in the Setup menu's Rec Quality settings. Consult the DVDirect's manual to choose the best quality level for the length of your video, such as HQ if your VCR tape runs an hour or less.

Finally, open the DVD Menu settings in Setup. The DVDirect gives you four menu backgrounds to choose from. You'll see the background image in the finished DVD's menu. Press the Return button to exit Setup.

In the DVDirect's Menu, select the DV Camcorder/Video > DVD entry. You should see a preview of the video your VCR is playing. A blue screen or



Sony's DVDirect VRD-MC3 can import video and burn DVDs on its own, but you also can connect it to your PC as an external drive.

a No Input Signal message indicates that the videotape player has stopped. Rewind or fast forward the tape to a point about 10 seconds prior to the video you want to transfer to DVD.

The procedure for copying the videotape to DVD is very simple. Press the Play button on the VCR, allow the image a second or two to stabilize (you'll see the video on the DVDirect's screen), and then press the DVDirect's big Record button. We found that if we pressed Record on the DVDirect when the No Input Signal message was showing, the Sony machine would wait for stable video and start recording automatically.

As the tape plays and the DVDirect records, the rim of the Record button will light up red. Also, a red Recording message will appear on the screen (but not on your finished DVD) with the amount of time left to record on the disc. You can pause the recording process by pressing the DVDirect's Record button; press it again to resume the transfer.

If you didn't set the Auto Stop Timer in the Setup menu, press the DVDirect's Stop button to stop recording when the video finishes. Press the VCR's Stop button a few seconds afterward. If there's still room on your DVD, you can start recording again with other video, including sections from other videotapes. For instance, you can eject the tape, put in a different one, cue up the footage you want, and then press Play on the VCR and Record on the DVDirect to start the transfer.

When you've captured all the video you want to put on your DVD, press Return to go back to the Menu. There's one more step to make your DVD playable, although you won't have to do it if you used a DVD+RW disc. Enter Setup and select Finalize Disc. The DVDirect will ask you a couple of "are you sure?" questions, so answer Yes and OK. The DVDirect will now write finalizing data to your DVD so that it will work in typical consumer players. You won't be able to record anything more to it (although if it's a DVD+RW, you'll still be able to erase and rerecord it later). When the Complete message appears, press the Eject button. Try your disc in your DVD player(s) to make sure the transfer worked.

Plextor ConvertX & Your PC

If you own a DVD burner, and you want to edit your video before writing it to a DVD, consider using your PC to transfer VHS to disc. You'll also have much more control over your DVDs' menus with this method. Make sure your hard drive has at least 6 to 10GB of free space.

You'll need a device that can capture video, such as an AMD All-in-Wonder X1900 graphics card ($499 [street prices are much less]; ati.amd.com; for WinXP) or Plextor's USB 2.0 ConvertX series ($79 and up; www.plextor.com; for Win2000/XP).

We used a ConvertX PX-AV100U ($79; www.plextor.com), which is an older model. The ConvertX accepts cables from your VCR's audio and video outputs, converts the video and audio to acceptable formats (or tells the included software to do this on your PC), and sends the data to your computer's hard drive. Your PC's USB 2.0 port must be set to Hi-Speed in the BIOS (Basic Input/Output System) Setup.

Before you connect the ConvertX, install its latest driver. We found it at www.plextor.com by clicking the Support and Downloads links and then selecting Drivers. Here, we also downloaded two updates for the InterVideo WinDVD Creator 2 software that came with the ConvertX.

Connect the VCR's audio and video outputs to the Plextor ConvertX's inputs, and then run the included USB 2.0 cable to your PC.

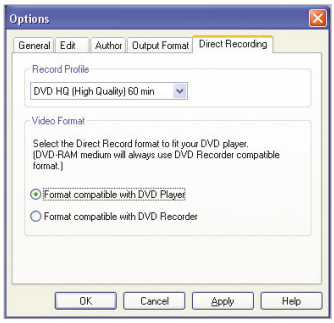
Next, attach the ConvertX to the PC with the included USB cable. Windows will detect the device.

Connect your VCR's video and audio outputs to the ConvertX's color-coded inputs. Again, if you have an S-Video cable and your VCR has this type of output, use it. A regular RCA video cable will work, too, albeit with lower picture quality.

WinXP will import the audio and video through USB. However, Win2000 users must attach the included mini-plug audio cable between the

ConvertX's AUX jack and the PC sound card's Line In port. Check your sound card's settings to ensure that the Line In jack is enabled and has its volume set to 100%.

Next, turn on your VCR, but stop the tape from playing. On your PC, install WinDVD Creator 2 from the CD in the ConvertX kit. You'll use this application to capture your VHS footage, edit it, and turn it into a DVD. Install the updates you downloaded from the Plextor site.



WinDVD Creator 2 has a few settings you'll probably want to change.

Reboot your PC and launch Creator. Select the Capture Video Into Hard Disk option. (The Capture Video Directly To DVD Disc option didn't produce good DVDs even on our fast PC.)

Put a blank DVD-R, DVD+R, DVD-R DL, DVD+R DL, or DVD+RW disc into your drive. Next, click Creator's Tools menu and Options. Under the Direct Recording tab, set the Record Profile to the best quality level with a time rating longer than your video, such as DVD HQ (High Quality) 60 Minutes. Also, select the Format Compatible With DVD Player option under Video Format. Click Apply and OK.

In Creator's main window, click Capture. A blue screen on the upper left will show you the VCR's video signal. Press Play on the VCR. The video will stabilize after a few seconds. Next, click Creator's Settings button, which has a wrench icon. Here you can change video settings, specify the audio volume, and tell Creator to stop recording after so many minutes, among other things. Click OK when you're through.

Use the VCR's controls to cue up the videotape to about 10 seconds before the start of your video, using the preview window in Creator as your "TV." If you can't hear the audio on your PC speakers, reboot and try again.

When you're ready to begin the VHS to DVD transfer, press Play on the VCR. A few seconds later, click Creator's big Start Recording button. The preview window may turn green during the transfer, but don't worry: The video is probably transferring, and you can verify this in a moment. Listen to the audio to determine when the program is over.

Click Creator's Stop Recording button (unless you've set it to stop automatically), and press Stop on the VCR. There should be a thumbnail of the video you've just captured in Creator's lower-right panel. Double-click the thumbnail and then click the Play button under the preview screen on the upper left. This will verify whether Creator actually captured the program. Your video should look much as it did on the tape, although you'll invariably lose some quality in the transfer and compression process.

Next, click Creator's Edit button. Your video clip should be in a bin at the upper right. Click and drag it down to the storyboard section below. Editing video is beyond the scope of this article, but you can explore Creator's capabilities if you wish. For now, click the Save button and name your project.

Click Creator's Author button to move to the next phase. Here, you can choose a menu template, add text to it, change the buttons on the menu, and many other things. We simply unchecked the Project Has Menu button and clicked Yes.

Finally, click Creator's Make Movie button. Adjust the Format or TV System settings if you need to and then click the right arrow button. The Burn To Disc option should be selected, so click the right arrow button again. Choose your DVD burner in the Select Device setting and then click Start.

When the burning process is complete, your disc will eject. Click OK and try your new disc in a DVD player.

Roll It

Video services can do VHS to DVD transfers for you, but the money you'll save by doing them yourself will quickly pay for the capture device you'll need. Action!

BY MARTY SEMS

Although we don't have room to talk about menu creation or editing here, you can explore WinDVD Creator 2's capabilities at your leisure.

Readers' Tips

Many of our readers come across fast, easy ways to solve a problem or accomplish a task. Well, we'd like to hear about it! If you have a great tip you'd like to share, please email us at readerstips@smartcomputing.com. If we print your tip, we'll send you a free *Smart Computing* T-shirt. You'll be the envy of all (well, some) of your friends.

Please include your first name, last name, and address, so that we can give you credit if we print your tip. (And so that we can send your T-shirt to you, of course.) Please limit your tip to 200 words or fewer. Not all tips received will be printed, and tips may be edited for length and clarity.

Helpful Advice & Solutions From Our Readers

Keyboard Your Way Through Browser Tabs

The April 2007 article, "Just Browsing," laments the loss of ALT-TAB functionality with Microsoft's newest browser version IE 7.0 and suggests getting around it by continuing to use multiple windows rather than the new tabbed browsing feature. Users will find that CTRL-TAB will work within a single browser occurrence the same way ALT-TAB does with multiple windows. The benefit is that you're limiting the toggle to what you're really looking for, as opposed to ALT-TABbing through all open system windows. This also works within Lotus Notes tabbed pages.

Linda E., Arlington Heights, Ill.

Selecting A Block Of Cells In Excel

When I want to select a block of cells whose outer limits are beyond what is presently shown on the monitor, I can experience a "runaway mouse," accidentally selecting considerably more than desired. To control the selection process, I do the following: Place the cursor in the upper-left corner cell of the block to be selected. Press the F8 key; this turns on the selection process. Move the Right, Left, Up, or Down arrow keys to select the other cells in the block.

Boyd A., Mesa, Ariz.

Change Font Size On The Fly

I've known for quite a while that you can change the font size on the fly in Internet Explorer by holding down the CTRL key while scrolling the mouse wheel. I was pleased to find out that this also works in other Microsoft apps, such as Outlook Express and Word. It does not change the font size in a printout except in IE.

Cheryl H., Cedar City, Utah

Super-Quick Shutdown

Here is the easiest way I have found to shut down or reboot my Windows XP Home Edition computer. You do not need any batch files, mouse clicks, or use of the command line; only three keypresses are necessary: Press the Windows logo key, let it go, and then press the *U* key twice (to shut down) or the *R* key twice (to reboot). Generally speaking, this works only on WinXP Home. Hope this helps everyone.

Albert W., Bushton, Kan.

Clean That LCD . . . Gently

I use a ladies' make-up brush to clean the screen on my laptop. They are available at all make-up counters and are made of the finest soft natural hair fibers. Mine is enclosed in a collapsible metal tube and takes up negligible space in my laptop carrying case.

Jack S., Ottawa, Ontario, Canada

A Virtual Treasure Chest

Create Your Own Virtual Reality Tours

Imagine visiting the State Historical Museum of Russia: You walk through the imposing main entry and find yourself in a room full of stunning exhibits and paintings, the walls decorated with gorgeous hangings and gold-threaded embroidery, all illuminated by huge crystal chandeliers. But yours is a special visit. You can walk anywhere you like; you'll encounter no cordoned-off areas, and no guard will stop you. You have the freedom to wander at will, to handle exhibits and artifacts, to see every sight, and to stay as long as you like.

Pretty nice trip, don't you think? Now imagine that you can do all that without ever leaving your own home. Because you can do exactly that: Thanks to VR (virtual reality) "movies," you can explore museums, tour homes, visit foreign ports, or examine every aspect of a tool, a vehicle, or an artifact, all from the comfort of your den, living room, or home office.

You've probably encountered some examples of VR movies on the Web, because they've become very popular with realtors, yacht brokers, and museums. But did you know that you can create your own? It's not nearly as complicated as you might think, nor does it require a lot of expensive equipment. We'll show you how.

Pano vs. Object Movies

To begin with, there are two types of VR movies: panos and objects. A pano, as you might guess, is a panorama—a 360-degree "tour" of an area. The area could be a building, a room, or an outdoor scene in which the distant horizon forms the extreme edge of the frame. An object movie, on the other hand, is a series of frames that depict all sides (and often the top and bottom) of a specific object. The object could be almost anything, from something as small as a bolt or screw to something as large as a car, boat, or motorcycle. One way to think of the two types of movies is to envision a pano as a movie in which the viewer stands *inside* of something and looks around, while in an object movie, the viewer is *outside* of the object, "holding" the object and spinning it around to view it.

The Process

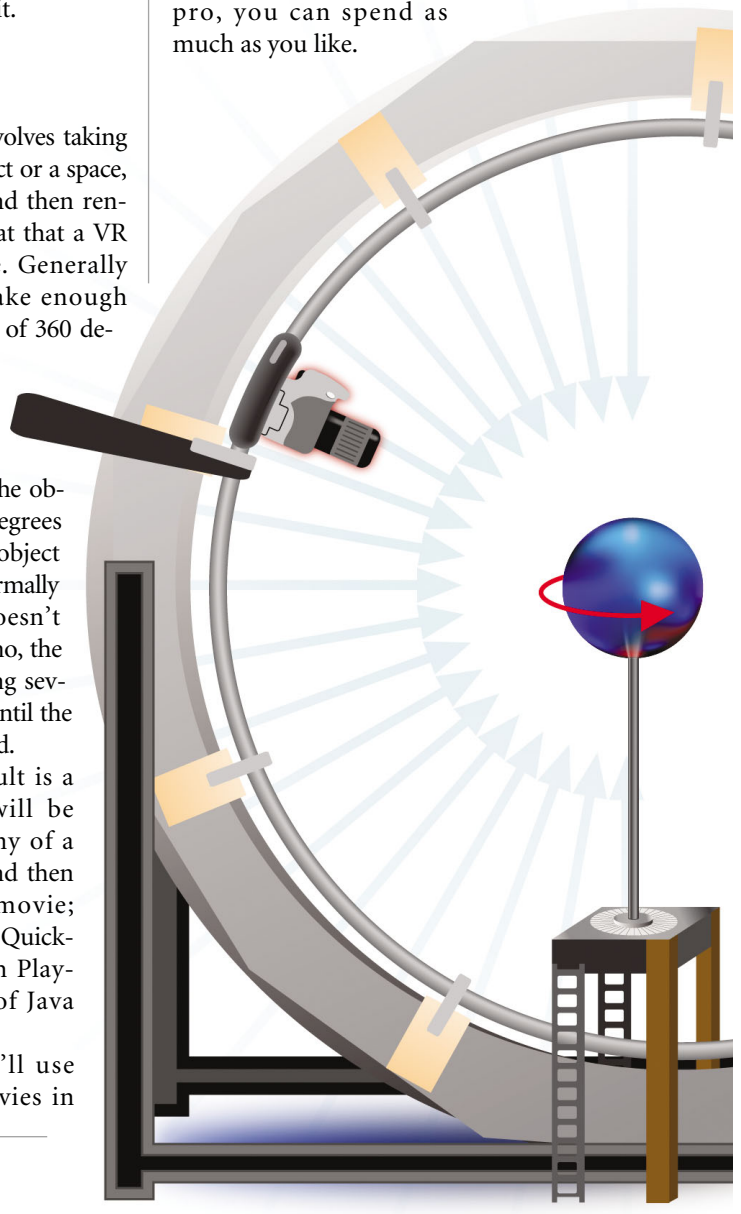
Creating a VR movie involves taking multiple pictures of an object or a space, stitching them together, and then rendering them in a file format that a VR player can accommodate. Generally speaking, you need to take enough photos to provide coverage of 360 degrees—in other words, a complete circle around the object or around a scene. If you're shooting an object, you repeatedly rotate the object a certain number of degrees until every portion of the object has been photographed, normally by a camera that itself doesn't move. When shooting a pano, the camera does move, pivoting several degrees for each shot, until the entire scene has been covered.

In either case, the result is a series of photos that will be "stitched" together by any of a variety of software tools and then rendered as a playable movie; the player could be Apple's QuickTime player, Adobe Flash Player, or any of a number of Java applets.

For our example, we'll use tools that create VR movies in Apple's QuickTime (MOV) format, but all of them work (and ultimately display) in a similar fashion.

The Tools

To create VR movies, you'll need a number of tools. Professional-quality tools do make the job easier, but don't go overboard; once you get your feet wet and decide to become a VR pro, you can spend as much as you like.



Digital camera. Don't even think about doing this with a film camera. You're going to shoot hundreds of photos. By the time you pay (and wait) for film processing, you'll have spent enough money to buy a decent digital camera.

You don't need the latest, greatest digital SLR (single-lens reflex), although that'd be mighty nice to have. When you're starting out, you can get by with almost any digital camera that has a decent glass lens. In our testing, we used everything from Toshiba and Actiontec network cameras to a pair of fairly inexpensive Web cams by Microsoft and Logitech. In the end, though, our favorite digital camera was the Olympus SP-550UZ, coupled with an Olympus RM-UC1 cable release. (At $500, the camera's certainly not inexpensive, but it accepts a remote shutter release and it offers a resolution of 7.1 megapixels, an 18X optical zoom, and a bevy of other quality features.)

Tripod and remote control unit. Stability is the name of the game. Whether you're pivoting your camera around a room for a pano movie or keeping the camera rock-steady as you rotate an object in front of the lens, you don't want anything jiggling or wobbling. Place the camera on a decent tripod and use a remote shutter release to prevent jiggling the camera when you press the shutter. Not all digital cameras support remote shutter releases, so if you're in the market for a camera that you intend to use for VR work, make this one of the criteria.

Turntable. When shooting a VR object movie, the idea is to have a static camera focus on the object while the object itself rotates. Each time the object moves, another photo is snapped. Placing the object on a turntable makes this process much simpler. You can purchase a fancy, motorized turntable, but you don't really need one. Instead, buy a plastic lazy Susan at Target or Wal-Mart (the kind of gadget you might put in your pantry or refrigerator) and draw lines across it, placing the lines 10 degrees apart. Mark the *edges* of the lazy Susan and then erase or cover up any lines on the top. (You'll be using the edge marks to determine degrees of movement; the lines on top will be covered by the object you're photographing.) If you need something larger than a lazy Susan, consider an old barstool with a rotating seat or something similar. We used an old drummer's seat that we got from, well, an old drummer.

This VR (virtual reality) movie of a Motorola video phone is being displayed in the standalone QuickTime player.

Software. The software you use to create VR movies can make or break your project—and your wallet. We looked at some great software, but it's all over the board in terms of price, sophistication, and usability. For example, we loved RealViz's pano tool, Stitcher Express (stitcher.realviz.com). At $119, it was simple and relatively inexpensive. But the RealViz object tool, ImageModeler (imagemodeler.realviz.com), was so complicated that we never did figure out how to use it. (Then again, at $880, the fact that we couldn't figure it out didn't seem to matter much.) Things weren't looking good, software-wise.

Luckily, we were referred to Dennis Biela, president of LightSpeed Media (www.lightspeedmedia.biz), an Illinois-based company specializing in VR photography. He directed us to a toolkit produced by VR Toolbox (www.vrtoolbox.com). "I'd recommend The VR Worx," he said. "It's reasonably priced and pretty easy to use. It'll do object movies *and* panoramas . . . and it'll also do links and hot spots." Perhaps most importantly, given that we're aiming this article at beginners, Biela also noted, "It's got a pretty easy, straightforward interface, as far as getting started right out of the box with no training."

Biela knows what he's talking about—he's been doing VR for years, creating virtual tours for automobile companies, museums, hotels, and other clients—so we decided to give The VR Worx a shot.

It was a good decision. For the money, The VR Worx is absolutely the finest suite of VR tools available. At $300 (you can download a free demo), it represents the best combination of sophistication, usability, and affordability we've seen. (About the only thing we don't like about it is the fact that it's not 100% compatible with Windows Vista, but at press time, the company said it was working on an update.)

The Walk-Thru

Let's create a QuickTime VR object movie. We'll use The VR Worx as our

VR Creation Tools & Info

Here's a (much-abridged) list of VR (virtual reality) tools you might want to examine. Remember that QuickTime is not the only VR technology available; you may also wish to consider software for creating Flash or Java VR movies.

3D Photo Builder Professional ($110; www.anything3d.com)
EasyPano PanoWeaver ($300; www.easypano.com)
Image Modeler ($880; imagemodeler.realviz.com)
Kaidan (www.kaidan.com; assorted software, turntables, pan heads, rigs, and other VR-related mechanical devices)
Stitcher Express ($119; stitcher.realviz.com)
The VR Worx ($300; www.vrtoolbox.com)


We built this VR (virtual reality) object turntable out of a piece of plywood and a drummer's seat.

example, but keep in mind that it's not the only software choice. (And, as we mentioned earlier, QuickTime is not the only format.)

Light the object. Illuminate the object as evenly as possible in order to minimize shadows and glare. Aim two lights, one from either side, at 45-degree angles toward the turntable on which your object rests. You can use white umbrellas or other translucent fabric to even out the light. You'll need a backdrop—white or black are easiest to work with. (But if you intend to use software to mask out a color, many people use red, green, or blue as a backdrop.) If possible, drape (or paint) the turntable itself in the same color as the backdrop. For setup and lighting of small objects, we used the Tabletop Photo Studio from Hammacher Schlemmer ($79.95; www.hammacher.com; item #73033); if you can afford a little extravagance, and as long as the items you're shooting are fairly small, this little "studio" is a very versatile tool. (It comes with lights, diffusers, and a backdrop, and it even folds up into its own handy case.)

Shoot the images. Now it's time to take our pictures. For the smoothest movement, take object shots in 10-degree increments. That means 36 photos, one shot each time you rotate the turntable 10 degrees. (If you don't need the rotation to be super-smooth, you might find that you can get away with 20-degree increments, or a total of 18 shots.)

If you want, you can stop shooting after you've made one round of 36 shots; you will have covered the entire object as it rotated around a hypothetical vertical axis. Notice, though, that you haven't shot from above or below. So, with 36 shots, you really haven't covered the *entire* object because you've only shot one row (or "line") of images. A one-line VR movie is often enough to do the job, but if you want to cover the object completely, you'll need to raise the camera, say, 45 degrees, and then (keeping the distance from lens to object exactly the same as it was) shoot another 36 images. Finally, shoot another series from 45 degrees below. (This requires that your object be placed on a thin pedestal of some sort so that you can shoot up at it. The pedestal can be masked out later.)

Note that the number of photos is beginning to add up. If you shoot a three-row VR object movie at 10-degree increments, you're taking 108 (36 x 3) pictures of every object. (See why you wouldn't want to try this with a film camera?) Note, also, that not all VR object software can handle multiple rows; if you intend to shoot in this fashion, be sure that the software you're planning to use can do the job.

Load the images. Now that you've shot your 36 (or 108) images, you need to load them into the software that's going to stitch them together. Various applications will handle this part of the process differently; in The VR Worx, simply click the Acquire tab and then click the Multiple button. This allows you to browse to the series of (in this case, 36) photos and tell the software to load the images.


Hammacher-Schlemmer (www.hammacher.com) offers a handy little portable studio ($79.95) that's great for shooting small objects.

Make adjustments. Once the images are loaded, you can—depending once again on the software you're using—perform various adjustments and tweaks. The VR Worx allows us to indicate hot spots (which, when clicked during the movie, will link to a URL or to another QuickTime movie), crop the images, adjust for any wobble (if your object is slightly off-center as you rotate it, a wobble will result), and make other adjustments.

Build and preview. Finally, it's time to make any last-minute changes (in such things as color depth, target size, and compression) and then click Build to create your movie. When the movie is built, click the Preview tab to see how it will look. If you're satisfied with it, click the Export button and save your movie as a QuickTime VR (.MOV) file.

Shoot A Pano Movie

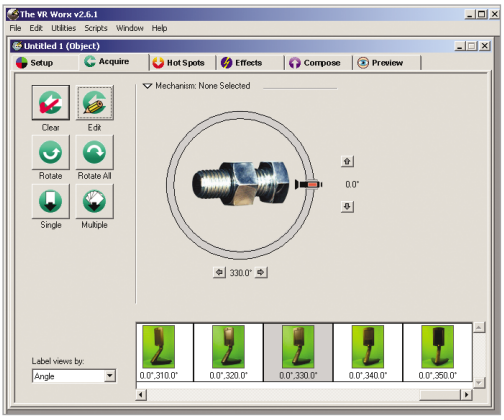
Picture yourself in the center of a room, pivoting in a circle. The room spins around you, and with each turn you view another segment of the room. Because you're not measuring the exact distance of each turn, no doubt there'll be some overlap in each view.

That's exactly how a pano works. (Keeping in mind, of course, that you needn't be *inside* at all; you could be shooting panos of a courtyard, a street scene, or a rolling prairie.) In the center of the scene is your camera, mounted on a sturdy tripod (preferably one with an accurately marked pan head and a level).

To create the pano, simply shoot, turn the camera, and shoot again. You'll end up taking a series of shots covering all 360 degrees of the field of view. The big question becomes: How much overlap should there be, and thus how many shots? Unfortunately, there's no exact answer to that question—and often no way to measure and ensure an exact overlap even if there *were* an answer.

The answer depends on a number of variables, including the software you're using, the lens you're shooting with, and the amount of "manual" stitching and blending (see below) that you're willing to do. In general, assume that the software will need an overlap of at least 5% (usually closer to 10%) and a maximum of 30% or so.

Shoot the images. While shooting, pay attention to how level the camera is. If it's not level, then your pano movie will wobble. (This is one reason to use a tripod with a level.) Whatever percentage of overlap you decide to use, try to keep it consistent among the shots; having some images with a 10% overlap, some with 20%, and some with a 30% overlap is guaranteed to create a nightmare when you later attempt to align those images.



To load your object images into The VR Worx, select the Acquire tab and then click Multiple.

Load the images. After shooting your series of images, load them into the software. If you're using The VR Worx, the process is similar to that noted above: Use the Acquire tab and the Multiple button.

Stitch and blend the images. Stitching is a process in which the images are warped and aligned with one another. Most software lets you indicate the accuracy of the alignment beforehand and also allows for manual adjustment of the results after the software initially attempts to stitch the pano. In The VR Worx, select the Stitch tab and then click the Build button. Then use the Blend tab to render the complete panorama.

Hot spots. Pano movies are often used to create virtual tours of homes, museums, boats, and the like. This is most often accomplished by creating multiple VR pano movies, all linked to one another by hot spots. Thus, if the viewer "looks" around a room and sees a doorway, hovering the mouse pointer over that doorway may change the pointer to indicate that a hot spot is present; clicking the hot spot loads and displays the next movie. In this fashion, hot spots provide a way to "walk through" the house, building, or other environment. Most software capable of creating panos will provide some way to embed hot spots to link to other movies (or, for that matter, to Web sites). In The VR Worx, simply select the Hot Spots tab and draw as many hot spots as you like. Double-click the hot spot to enter the URL or movie title to which you'd like to link.

Compose and preview. The final steps are similar to those for creating an object movie. After selecting the Compose tab, make any last-minute changes (color depth, target size, compression, etc.) and then click Build to create your movie. When the movie is built, click the Preview tab to see how it will look. If you're satisfied with it, click the Export button and save your movie as a QuickTime VR (.MOV) file. If you notice any wobble or ghosting, go back to the Stitch and Blend tabs to adjust the alignment of the images.

The Olympus SP-550UZ, which features an 18X optical zoom and a wired remote control shutter release, is perfect for VR (virtual reality) work.

Light your object as evenly as possible. Fabric diffusers can help.

Bitten By The VR Bug

This overview barely scratches the surface of VR technology, but it's enough to get you started. What will you do next? Produce VR movies of your next vacation? Build a tour of your home? Create a virtual showing of your rock, gem, or coin collection? There's virtually no end to the possibilities. ▮

BY ROD SCHER

Learning Linux

Penguin-Powered Printing

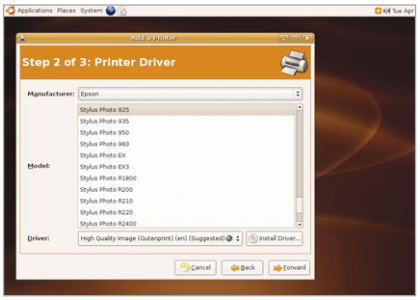
Over the course of my Linux adventures, I've discovered that I am still doing everything Windows has to offer, only without Windows. Whether I'm surfing the Internet, playing a computer game, tinkering with a spreadsheet, or playing a computer game (hey, you know what they say about "all work"), Linux gives me a computing experience that ranges anywhere from acceptable to preferable. (In my opinion, not having any trace of Internet Explorer is a *good* thing.)

But until now, my Linux PC has been lacking a very common peripheral: a printer. You know, that noisy thing that sits next to your computer and is always groaning for more ink or paper. (Now that I think about it, maybe I *don't* want to add a printer to my Linux system.) If you ever decide to upgrade your Linux system from plaything to household workhorse, you'll eventually need to print a document, Web page, or photo. And for anyone courageous enough to venture into open-source scrapbooking, having a functional printer to accompany your Linux PC is all but essential.

Linux detractors quickly point out that driver issues are a prime reason for sticking with Windows. They complain that your peripherals, when connected to a Linux machine, will become little more than expensive doorstops. Although this might have been true in the past, Linux has come a long way. I was pleasantly surprised to find that even a task such as installing a printer is relatively painless in Ubuntu.

To start my foray into Linux printing, I connected an Epson Stylus Photo 925 to my Linux PC via a USB cable and turned on the printer. Then, I clicked System, pointed to Administration, and clicked Printing, which opened the Printers window. I double-clicked New Printer, and Ubuntu automatically detected and properly identified the Stylus Photo 925. In Step 1, both relevant radio buttons, Local Printer and Use A Detected Printer, were selected by default, so I clicked Forward to continue. In Step 2, Ubuntu again automatically selected the Stylus Photo 925 from among its list of known Epson printers. It also chose the Gutenprint printer driver, so I clicked Forward to continue. Finally, I clicked Apply in Step 3.

To test the fruits of my (relatively little) labor, I loaded a small stack of paper in the Stylus Photo 925's tray and opened the OpenOffice word processor to create a test document. Like Microsoft Office, I clicked File and Print to open a Print window. Then, I clicked OK, and the Stylus Photo 925 roared to life and presented me with a printed copy of my test document.



Ubuntu's long list of supported printer manufacturers and models is a welcome sight for anyone who's nervous about installing printer drivers.

The test print's quality was initially lackluster and became progressively worse after I fiddled with some of the print settings. Concerned that it could be a driver issue, I connected the Stylus Photo 925 to a Windows PC (with tried-and-true drivers). The test prints on my Windows PC were just as ghastly, so I assumed the problem lay in the printer itself. After performing the usual printer maintenance (cleaning print heads, checking ink cartridges, etc.), the Stylus Photo 925 decided to shed its surly demeanor and produce an acceptable print.

The successful outcome of my amateur printer repair service emboldened me to try the Stylus Photo 925 on my Ubuntu system again. This time, the test page was just as good as the successful test print on the Windows PC. It seemed like the printing time was longer on the Linux system, but the difference wasn't large enough to matter. The fact that installing a printer on a Linux system required such little effort on my part more than made up for the slight printing delays.

Obviously, I may have lucked out by having a printer that worked well with Linux. Although Ubuntu's list of printers is long, you may have to manually hunt down and install drivers for your printer. If this turns out to be the case, I'd go to the Linux Foundation's OpenPrinting Web page (www.linuxfoundation.org/en/OpenPrinting). It has an enormous database of printers (including each printer's compatibility rating with Linux), as well as instructions for installing drivers.

And be sure to tune in next month, as I embark on the final voyage of my "Learning Linux" expedition. ❚❚

BY VINCE COGLEY

WEB TIPS

Enhance Your Time Online

What Are You Doing Right Now?

Problem: On a couple blogs, I have noticed a link to something called Twitter. What is this?
Solution: Social networking sites keep getting stranger and stranger. Twitter (www.twitter.com) is a cross between a blog and an instant messenger program. Once you register for a free account, you can post a maximum of 140 characters of text answering the question, "What are you doing right now?" Seem silly? Don't tell Senator John Edwards (twitter.com/johnedwards), who is using the new technology in his presidential bid. Fans of Twitter claim it is highly addictive; however, this is definitely a love it or hate it (or get it/don't get it) kind of site.

Help Your Recipes With Food Substitution

Problem: I bought a cookbook that has recipes with ingredients I can't find in my local grocery store. Do I have any options other than going to an expensive specialty store?
Solution: Information is power, so before you go shopping, first search around the Cook's Thesaurus (www.foodsubs.com). This massive food encyclopedia has descriptions, pronunciations, and pictures for thousands of entries. What makes this special—indeed, what makes it a thesaurus—is its suggested substitutions for different ingredients. Use this for recipes with exotic ingredients, or use it as a way to vary a meal or spread. Check out the cheese section for ways to move beyond Swiss and cheddar without straying too far from a familiar palate.

Fast Food Finder

Problem: I'm new in town, and I'm looking for a burger. Instead of driving around all night, I thought I'd start my search on the Internet.
Solution: No one said finding fast food was difficult. Most establishments have store locators right on their home page—just punch in your ZIP code, and you're practically already there. But if you're looking for something more "big picture," you have to check out this Google Maps mash-up, Fast Food Finder (www.fastfoodmaps.com). Ten of the big chains are listed, including over 13,000 McDonald's, 7,000 Burger Kings, and 6,000 Taco Bells.

Food facts at your fingertips.

Don't worry about getting your voicemail, let your voicemail get you.

Online Voicemail Manager

Problem: I have home voicemail service provided by the phone company, but the only way I can tell if I have a message is to pick up the phone. Is there a better way I can be notified?
Solution: GotVoice (www.gotvoice.com) has an interesting and free online service that might fit the bill. Sign up with GotVoice, give it your voicemail info (including phone number and PIN), and this site will send you an email with a link to an MP3 of new messages waiting for you. It works with most major cell carriers, as well as home systems and VoIP services . . . though it doesn't work with old-fashioned answering machines. But if you have voicemail provided by the local phone company, check with them first to see if they offer email notification.

Disposable Email

Problem: There are a lot of sites that I visit that require free registration. I'm worried that the more my email address gets out, the more spam I'm going to get.
Solution: Many Internet users have a common practice of signing up for "dummy" email accounts (using free services such as Hotmail, Yahoo! Mail, or Gmail). The problem then becomes managing all these accounts. GishPuppy (www.gishpuppy.com) has an alternative. By signing up, you can create a new address each time you're asked to provide your information on the Web. Mail to these addresses is forwarded to your prime account, and if one of these starts to pull in spam, just delete it and create another.

COMPILED BY JOSHUA GULICK
ILLUSTRATED BY LINDSAY ANKER

Car Care & Repair

2CarPros

www.2carpros.com

We love troubleshooting databases, whether they cover computers or cars. They make great self-help tools: You can look up your problem, find an answer, and then solve the issue without waiting for a tech support rep over the phone. The 2CarPros database stores thousands of articles in which 2CarPros professionals answer users' questions at no charge. You can send your own question to the 2CarPros team, but we suspect you'll find a similar problem (and its solution) in the database if you run a quick search. The site lets you browse questions by manufacturer, symptom, topic, and other categories.

CarCare.org

www.carcare.org

If you want to get to know your car better, this is the Web site for you. The Car Care Council, which includes employees from many businesses in the auto industry, created the Be Car Care Aware campaign to promote "safety, dependability, and pride of ownership." The site includes articles about maintenance and car repair, but many visitors will appreciate the graphic on the main page more than anything else. The graphic, which displays a car, features nearly 20 labels that help you identify important car parts. When you roll your mouse over a label, you can choose from a list of additional car parts to read detailed articles, complete with pictures.

CarMax

www.carmax.com

Sick of your car? If you're planning to sell a car but don't want to visit a traditional dealer, check out CarMax, which has stores in 23 states. The Web site's We Buy Cars section has plenty of information about the process so you know what to expect when you take your car to one of the CarMax locations. If you're also planning to buy a car, you can search the site's inventory database to find used or new vehicles at nearby CarMax stores. Be sure to check out the Research Tools section before you dig into your search, as it has plenty of car-buying tips.

Car Talk

www.cartalk.com

Cars are fun, but their owners are just plain funny—at least when they call into "Car Talk," the well-known talk radio show that helps car owners troubleshoot their car problems. You'll learn as you laugh when you check out the equally funny Web site. If you have car trouble or want information about car maintenance, check out the Actual Car Information section. You'll find great info here, including tips for driving safely, changing a flat tire, and jump-starting your car. You'll also find a Do-It-Yourself Guide that teaches you to handle minor repairs. The site has a great forum, in which car enthusiasts share their knowledge and friendly jibes.

Club Hot Rod

www.clubhotrod.com

If you're the type of driver who just wants a car that will get you around, this Web site is not for you. Rather, it's for the many drivers who love to soup up their cars, new or old. The site's two major sections include a photo gallery and a forum. Because the site is so interactive, it's buzzing with new material every day—in fact, we often found that as many as 150 people were actively visiting the site during our visits. You'll need to register for a free account to post messages on the forum, but you can browse both the forum and gallery anonymously.

Mechanic Advisor

www.mechanicadvisor.com

If your primary role in your car's preventative maintenance is simply driving it to the shop, you're probably much more interested in finding a mechanic than finding a DIY car repair Web site. To that end, we'd like to introduce you to Mechanic Advisor. The site maintains a huge database of mechanics across the country, as well as articles that will help you get the most from your visit. Each listing in the database includes the mechanic's contact information and a link to the mechanic's Web site. You can search for general or specialized mechanics.

Trust My Mechanic.com

www.trustmymechanic.com

Austin Davis, author of "What Your Mechanic Doesn't Want You To Know," has loaded this Web site with articles that will help you better understand your car and, more importantly, help you determine whether your mechanic is giving you the straight story on your car repairs. The site's articles explain common car problems and terms you're likely to encounter in a mechanic's shop. You'll learn about tire pressure, blown head gaskets, and what to expect when you take your car to the shop for a tune-up. The site also has advice that will help you say the right things (or rather, not say the wrong things) when you take your car to the shop.

That's News To You

Finding the appropriate Usenet discussion group to match your interests can be a monumental task. So each month, we scour tens of thousands of newsgroups and highlight ones that delve into popular topics. If your ISP (Internet service provider) doesn't carry these groups, ask it to add the groups to its list. This month, we hit the Usenet highway.

rec.autos.tech

Whether you're simply trying to figure out how to safely get rid of engine oil or need some detailed advice for a complex car repair, you won't have any trouble finding a helpful and knowledgeable user here.

rec.autos.sport.nascar.moderated

You won't receive as many on-topic posts in the standard rec.autos.sport.nascar group as you will in this moderated group. Users here are active and enthusiastic, and they are willing to share the fun with anyone else who loves auto racing.

alt.autos

Users here trade tips and tricks on solving car problems, avoiding insurance scams, and finding car parts. If you're interested in a particular car manufacturer, add it to the group name to find a group dedicated to that manufacturer's cars. For example, you'll find talk about Toyota vehicles at alt.autos.toyota.

Share The Wares

Some of the best apples in the online orchard are the free (or free to try) programs available for download. Each month we feature highlights from our pickings. This month, we check out software that will help us keep our cars healthy.

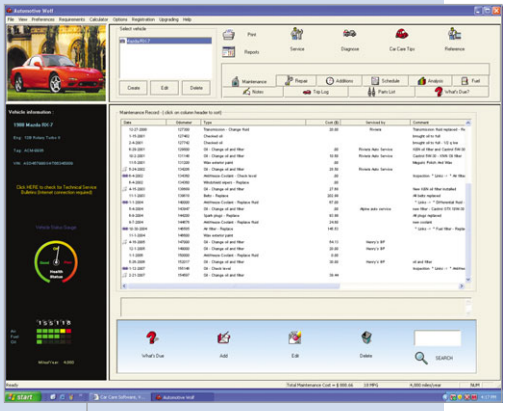
Automotive Wolf

www.lonewolf-software.com

Do you remember when you last took your car to the shop? Do you remember what the mechanics did to your car? If you don't keep a written record of your visits to the mechanic, your memories will blur over time and you'll find yourself wondering if your car needs a tune-up soon or a few months from now. To that end, Lone Wolf Software offers Automotive Wolf, a program for your PC that lets you track as much (or as little) information about your car as you'd like.

You can create a profile for each car in your family. When you create a profile, you'll enter your car's make, model, and odometer reading, among other things. Next, you'll need to choose a maintenance schedule. We really like this feature because it lets you choose a schedule that best suits your needs; if you don't want to take your car into the shop for maintenance often, you can choose the Basic option, which involves less maintenance than the other options. Of course, car enthusiasts won't need to pick one of these cookie cutter maintenance schedules—the software lets you create custom schedules, too.

Automotive Wolf has several worthwhile features. The software complements its great maintenance scheduler with an address book (for your favorite auto shop's contact info) and a diagnostic feature that helps you troubleshoot car problems based on your vehicle's symptoms.



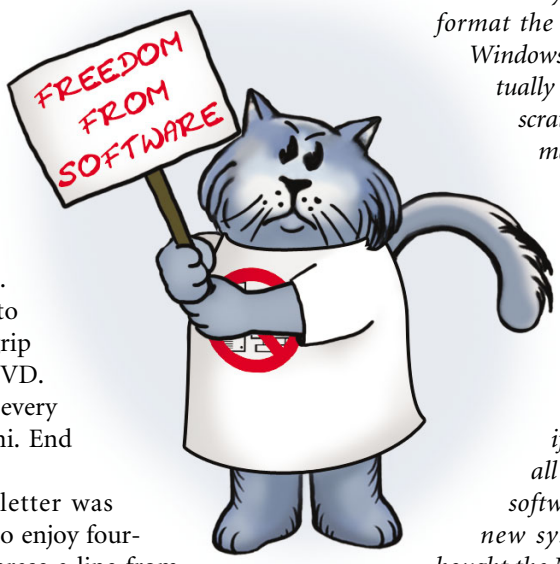
Track your car's maintenance history and troubleshoot car problems with Automotive Wolf. You can install the software on two computers without breaking the license.

As you enter information in the program's maintenance categories, you'll find that a column on the left side of the window doesn't change. This column contains your Vehicle Status Gauge, which lets you know how well you're maintaining your car. If you don't keep up with important maintenance, the gauge will indicate that the car needs some attention.

Overall, Automotive Wolf is a solid maintenance record program. The software lets you keep records of an unlimited number of cars, and the paid version includes two license keys so you can install the program on two computers. It supports Windows 98/ME/NT/2000/XP/Vista. Lone Wolf Software offers a 30-day trial of Automotive Wolf and sells it for $29.95 (Standard) or $39.95 (Pro). ▮

Wake Up & Smell The Outrage

My April column, "Breaking Up Is Hard To Do. Oh, Wait . . . No, It's Not," was a hard-hitting, journalistic exposé (I'm thinking Pulitzer, here) in the form of an open letter to computer manufacturers. In that letter, I bravely challenged the long-standing, hideous practice of installing gratuitous software in new systems.



In a 'net shell, it is my position that, rather than force-feeding programs to PC purchasers, the manufacturers should provide a list of applications that they *usually* install and let the purchaser decide which ones, if any, he or she wants. Further, I'm beseeching vendors to release their white-knuckle death grip on the operating system CD or DVD. It should simply be included with every single PC we purchase. Period. Fini. End of discussion.

Reader response to my open letter was mind-blowing, for those of you who enjoy four-decade-old superlatives. To paraphrase a line from the 1976 movie "Network," "We're mad as hell, and we're not going to take this anymore!" Back then, we'd be heading for the picket line. Today, what with blood-pressure concerns and the need for comfortable shoes when protesting, I'll amend that to: "We're highly annoyed, and we would like our concerns addressed." Take that!

Years ago, during the Burger Wars (a conflict in which I was proud to be served), Burger King created a whopper of a marketing campaign with four little words: "Have it your way." Think about it, PC manufacturers.

I want to thank each of you who responded to my column. I saved all the responses, and I will be presenting a condensed version to Dell, Gateway, HP, Big Paulie's PC Pigpen, and other chronic offenders, imploring them to wake up and smell the outrage. Power to the Users! Here's a small sampling of your feedback:

"RIGHT ON! I hate spending my hard-earned money on a new computer that I have to clean up before I even use it."

"When I bought my new laptop, it was crammed with junk software. I made matters worse by purchasing a two-year extended warranty. I now have the added pleasure of dealing with Bangalore-based support. Never again."

"Your April column struck a nerve. In a conversation with one of Dell's reps, after eliciting an admission that they are paid to install software, I offered to pay them not to add any programs other than the OS. The rep's response to my request was to summarily hang up on me."

"The PC purchasing public is being abused by manufacturers who are being bribed to foist unneeded and unwanted programs. I refuse to play that game and can only say 'Amen!' to your suggestions to find a service-oriented, customer-friendly local PC builder."

"When I buy a machine, the first thing I do is reformat the hard drive. If I couldn't wrestle the Windows installation CD from the vendor, I actually buy a new edition and install it from scratch. It costs more, but at least I have a machine configured the way I want it."

"Thanks for letting me know that I'm not the only one who feels this way."

"I am a Technical Analyst in a 4,500-employee state Human Resources department. We recently purchased a large number of laptops from HP/Compaq. Despite the fact that our purchase contract specified to the contrary, the machines had all the AOL, MSN, 'trial-this, trial-that' software. The entertainment junk on the new systems was so bad, you'd think we bought the Media Edition."

"How do we band together to stop this 'plethora of software' from being installed when we don't want anything to do with it in the first place? Start the petition, Mr. M., and I'll sign it!"

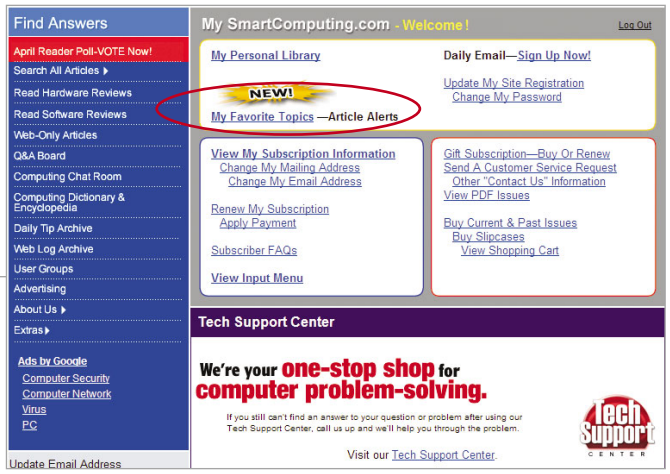
And last, but not least: *"Dear Mr. Modem: At first I was distraught when I read your letter. Upon reflection, I realized how little you care about my needs in this relationship. You obviously care only about yourself and what you want. Apparently you think you are the most important person in this relationship. If only I could make you understand just how meaningless your feelings are to me. After giving this some additional thought, I began to realize how many other ~~suckers~~ er, customers out there are willing to love me just the way I am: arrogant, selfish, and uncaring. Best of luck in your new computer life. May you have many more crashes. Sincerely, Computer Manufacturer."*

I'll be back next month with a fabulous potpourri of tips, tidbits, and assorted dog-days-of-August digital delights. Until then, have a safe and happy summer! ▮

BY MR. MODEM

Mr. Modem, (Richard Sherman) *is an author, syndicated columnist, radio host, and publisher. "Mr. Modem's Weekly Newsletter" provides personal responses to subscribers' computer and Internet questions, plus weekly computing tips, Web site recommendations, virus alerts, hoax warnings, and more. For additional information, visit* **www.MrModem.com**.

My Favorite Topics!



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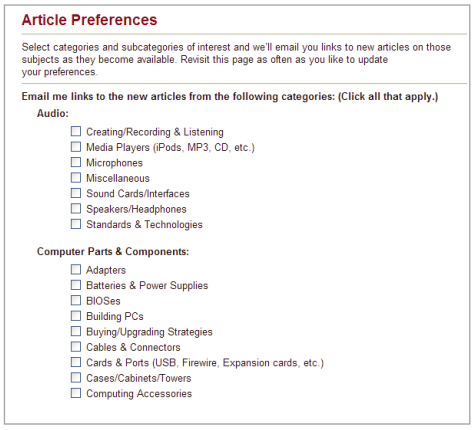

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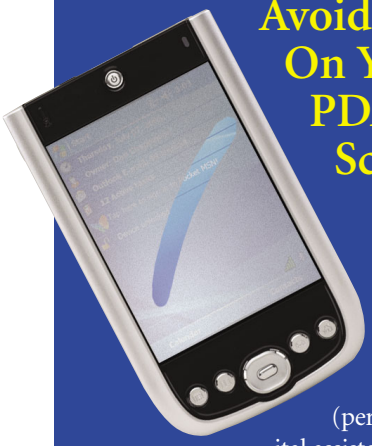

Avoid Dust On Your PDA Screen

Thanks to static electricity, your PDA (personal digital assistant) screen will attract inordinate amounts of dust in a short period of time. To reduce the amount of dust on your screen, wipe it with a static-cling control sheet that you already sent through the dryer with a load of laundry.

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Hard drives store data on a stacked series of circular platters, read by a tiny arm traveling across the platters' faces dozens of times per second.

We often take hard drives for granted. Install programs, uninstall programs. Save a file, open a file. It's simple—what more is there to consider? In fact, hard drives are incredibly intricate and delicate pieces of machinery. And they're integral to almost every computer system operating today. Your system can benefit greatly from regular hard drive maintenance to keep hard drives clean, organized, and trouble-free. But first, what are hard drives, and what do they do? Why should the details matter?

What Is A Hard Drive?

IBM's first hard drive, invented in 1956, consisted of 50 stacked platters and a robotic control arm. Each platter measured 24 inches in diameter and combined for a total capacity of just 5MB. Since then, hard drive technology has changed immeasurably, but the underlying concept has remained the same.

Hard drives are permanent storage devices, meaning they retain data even when drawing no power. They're also nonremovable, meaning the disk is inseparable from the drive mechanism, unlike a floppy or optical drive. Note that "nonremovable" isn't the same as nonportable or exclusively internal. Plenty of hard drives are neither. Within each drive are multiple platters and heads; magnetized platters store electronically coded information and are written to and read by moving heads as the CPU tells the drive controller what data it needs from which location on the platter(s).

Hard drives were crucial to the explosion of PC and Internet technologies, ever since their appearance in personal computers during the 1980s. Few of our applications or digital media today would be possible without modern hard drives. Improvements in computing power, display technologies, network bandwidth, and Internet connectivity all rely on fast, reliable access to huge (and ever-growing) storage capacities. And the vast repositories of information and entertainment available today would be inconceivable without massive amounts of affordable and scalable storage.

How Do Hard Drives Operate?

Hard drives contain magnetized platters spun by a motor and spindle, read by a head and arm mechanism. Envision the head reading and writing to the platter the way a needle reads a record, except that hard drives contain five or more platters with data written on (and heads reading) both sides. The heads hover along the spinning platters on microscopically small cushions of air, creating tiny magnetic fields along the platter's coating that can be read as binary ones and zeros. The head and arm transmit electronic information to and from the drive controllers, which in turn communicate with the CPU to feed the system's applications, hardware, and operating system. With all those tiny moving parts relying on incredible accuracy, there's very little room for error. Time, change, and physical trauma can all cause the heads to crash into the platters or the delicate electronics to fail. Limit your hard drives' exposure to catastrophic risk by treating them (and devices containing them) with care and back up important data regularly. (See "System Savior" on page 60 for various types of hard drive backup.)

As noted above, hard drives include all their mechanical and electrical components in a single enclosure protecting the drive's delicate internal workings. Even small debris particles can irreparably damage a drive's physical surfaces. However, drives need filtered

66 Install A New Drive

openings to equalize air pressure inside and outside the enclosure. It's important to preserve open spaces around your drives, whether internal or external, and to control the build-up of dust in the area.

Hard drives can connect to the motherboard and the rest of the computer in several different ways. The most common interface for internal drives is EIDE (Enhanced Integrated Drive Electronics), which normally uses familiar flat gray cables. EIDE is a relatively fast communication standard, the connectors are easy to attach and remove, and it's utterly ubiquitous. Several new standards, including SATA (Serial Advanced Technology Attachment), FireWire, and USB 2.0, threaten EIDE's dominance. Our sidebar, "The Future Of Hard Drives," discusses these standards in more detail. Each standard offers advantages in speed, portability, or convenience that EIDE can't match. When shopping for new or replacement drives, make sure the drive's interfaces match those available on your motherboard or computer case (for external drives), though it's usually worth upgrading to the fastest and most recent standards when possible. (If you're adding an additional hard drive or replacing an old one, see "Install A New Drive" on page 66 for tips on how to buy, prepare for, and install a new drive.)

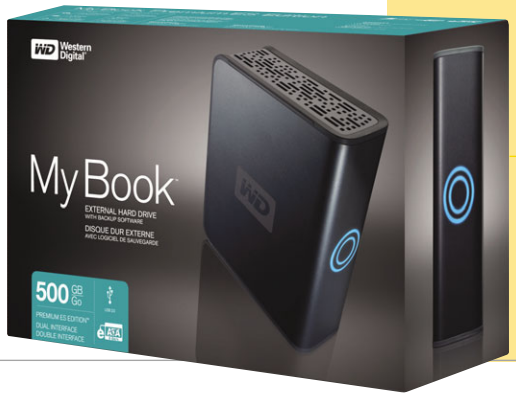
How Do Hard Drives Store Data?

A hard drive's physical structures and subsequent considerations are important, but understanding how drives store and retrieve data also has implications for performance and data reliability.

Hard drives arrange data on each platter in concentric rings. Each side of a platter constitutes a head. Each complete ring, cutting through every platter, constitutes a cylinder. Sectors cut across each cylinder and head, like spokes on a wheel, to create an equal number of arcs, which narrow as they move toward the platter's center. Together, the head, cylinder, and sector provide a unique location for every piece of data stored on a hard drive.

Not all sectors are the same size, however, and not all drives create the same number of sectors. Operating systems make the best of this characteristic by fitting files or fragments to fill sectors as closely as possible, but the inevitable waste always affects system performance. Similarly, many files are too large to fit in a single sector, and space isn't always available in consecutive sectors. So files spread out across the drive, while the operating system tracks where each piece resides. Over time, this fragmentation slows system performance as the process of finding and retrieving each piece of a file becomes more and more demanding. (See "Clean It Off: To Defrag Or Not To Defrag?" on page 53 for information on hard drive defragmentation.) Finally, when operating systems and other applications lose track of files or fragments, clutter accumulates on the drive, increasing the risk of corrupted or conflicting files (see "Clear Out The Clutter" on page 64 for how to safely clear out hard drive clutter). All these limitations of data storage add up to one simple prescription—cleaning out and maintaining your file system impacts drive performance and reliability a great deal. ❚❚

BY GREGORY ANDERSON



The Future Of Hard Drives

Serial ATA. The SATA (Serial Advanced Technology Attachment) interface is coming to prominence for internal hard drives due to its convenient form factor and technical advantages. SATA carries data on a single thin cable, which creates more room in the chassis and allows for smaller cases. SATA cables are also faster than EIDE (Enhanced Integrated Device Electronics) and can extend to lengths up to 1 meter, providing more flexibility working in cases without disconnecting everything.

Hybrid flash drives. Flash memory, usually found in media cards and USB thumb drives, operates on somewhat different principles. Flash memory, without any moving parts, doesn't contain platters, heads, or arms. Technically, flash memory devices aren't hard drives at all, though many people have become accustomed to thinking of any permanent built-in storage as a "hard drive." Many hybrid hard drives built since 2006, in fact, combine a disk drive with flash memory to reduce power consumption and improve seek times for frequently accessed data.

FireWire and USB 2.0. Until the advent of FireWire (also called IEEE 1394 or i.Link) and second-generation USB, external hard drive storage wasn't feasible for applications needing fast access to large amounts of data. Now, more and more storage is going external and portable, thanks to these high-speed connections.

Network-Attached Storage. Increased network bandwidths herald the expansion of NAS as an alternative to local hard drive storage. NAS simply refers to network-accessed hard drive capacity (including network shares and dedicated storage servers), rather than locally attached drives for storage.

The advent of high-speed external connection standards (including USB 2.0 and FireWire) is driving an explosion in high-capacity external hard drives.

Clean It Off: To Defrag Or Not To Defrag?

How & Why We Defragment Our Drives

It might surprise you to find that the data that appears to be so neatly organized inside files and folders on your computer is actually more jumbled than a bucket full of Scrabble letters.

While a computer's hard drive is very precise in remembering where it has stored your data, it does tend to store it in some strange places from time to time. Unlike a neatly organized filing cabinet, your computer breaks up large files into smaller file fragments tailored to fill the first available free spaces on your hard drive.

This process of saving file fragments in the first available slot on your hard drive forces your computer to work harder to read an entire file from start to finish. Because the computer must work harder to read a particular file or program, it takes more time to complete even a simple task, such as sending an email. Organizing these scattered file fragments into contiguous segments on your hard drive is called defragmenting.

Reorganize Your Hard Drive

To better understand the concept of defragging a hard drive, imagine picking up today's newspaper and reading a front-page article. After a few paragraphs, you are asked to turn to another page to continue reading the story.

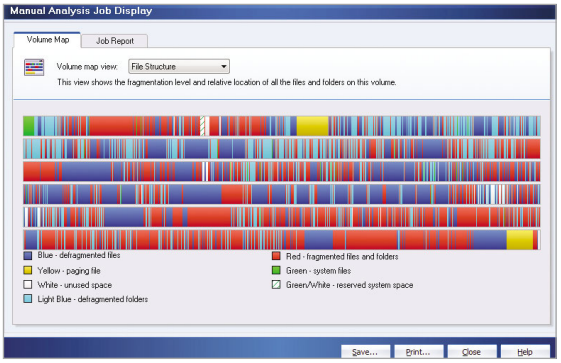
It takes some time to open the paper, turn to the proper page, and find the story to continue reading. Now, imagine that you are required to move to a different page after each paragraph of the story. It would take a lot more time to read the fragmented story than it would have if the story was printed on a single page.

The same concept applies to your hard drive. It takes time for the mechanical components of your hard drive to skip all over your drive and locate all of the fragments of a single file. Over time, hard drives can become so fragmented that they begin to boot slower or seem sluggish when performing common tasks.

Regularly defragmenting your hard drive will take all of the file fragments that are scattered about your drive and organize them into complete files. Because your hard drive can now read the fragments as one organized file, your computer will perform faster than it did in its fragmented state.

Windows Disk Defragmenter

Windows XP comes with a defragmentation tool appropriately called Disk Defragmenter. The Windows Disk Defragmenter can only defragment files that are not in use. So, although you can continue to work as your computer is defragmenting its



Diskeeper's defragmentation software can defragment files that the Windows Disk Defragmenter cannot work with because they are in use.

The Great Debate: How Often To Defrag

If defragging your computer results in a performance increase, it would seem that frequently defragmenting your computer would keep it in top form at all times. But exactly how often should you defragment your hard drive?

This question is often hotly debated because the answer is relative to what you use your computer for. Any computer use (even simply turning on your computer and turning it off again) creates a degree of file fragmentation. To know how often you should defragment your hard drive, you first need to know what kind of a computer user you are. Most computer users can be sorted into three categories: minimal users, moderate users, and advanced users.

Minimal. A minimal computer user only uses a computer for a certain fixed task, such as typing a letter or playing solitaire. Most often, a minimal user does not use email or the Internet and is on his computer less than a few hours a week. Minimal users should defragment their hard drive once each month at minimum. While additional defragmentations will not hurt the drive, the performance gained through the process does not justify the time or effort.

Moderate. A moderate user uses his computer on a daily basis for Internet, email, word processing, or other productivity tasks. Digital photography activity, music downloading, and frequently adding and removing programs can lead to significant file fragmentation in a short period of time. A home office user would easily fit into this category. Moderate computer users should defragment their hard drive once each week. The temporary Internet files that are stored and subsequently deleted can lead to significant file fragmentation. In addition, desktop publishing applications or other productivity tools tend to create significantly large temporary files that are frequently modified and then deleted once the application is closed. The holes left behind by these deleted files are known as free space fragmentation.

Advanced. An advanced user is defined as a computer user who uses his computer for several hours each day for intense activities. These activities can include high-end video gaming, video- or audio-editing, advanced photo manipulation, and software development. Advanced users should defragment their hard drive(s) daily or every other day. The typical advanced user activities create enormous temporary files that are almost constantly modified before eventually being deleted. In addition, the massive audio or video files that are created by these users tend to be broken up and stored in every available nook and cranny on the drive. Advanced users who do not defragment their drives frequently will see rapid and dramatic reductions in performance as a result of file fragmentation.

hard drive, you will get a more complete defragmentation if you do not have programs or files open during the defragmentation process.

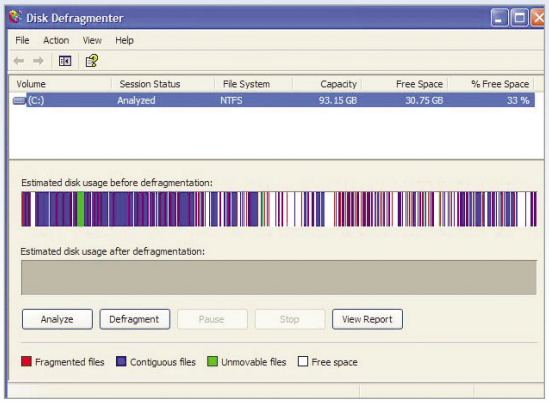
To get an even more thorough defragmentation, you can reboot your computer into Safe Mode by pressing the F8 key when your computer is booting before the WinXP splash screen appears. This prevents any applications from loading when your computer boots, including your antivirus and firewall software. With no programs or files open, the utility is free to defragment every file on the drive, with the exception of certain Windows files that are in use.

You can access the Disk Defragmenter by clicking Start, All Programs, Accessories, System Tools, and selecting Disk Defragmenter. When the Disk Defragmenter utility opens, you will need to click the drive you wish to defragment (if you have more than one hard drive). Once you have selected the drive you wish to defragment, you will be presented with two options: Analyze or Defragment.

The Analyze button creates two informational graphs that can help you determine how badly fragmented the files on your hard drive have become. The first graph shows the number of Fragmented Files vs. Contiguous Files. Unmovable Files are represented in green and Free Space is shown in white. The second graph will show the expected level of file fragmentation should you decide to defragment the drive. If you choose to analyze your drive before defragmenting it, Windows will give you its suggestion as to whether you should defragment the drive. You also can click the View Report button to get a more detailed analysis of the fragmented files that were found on your computer.

When you click the Defragment button, the utility simply begins to reorganize your file fragments. Smaller fragments are shifted into free areas of the drive and slowly sorted and resaved as contiguous files. The amount of time required to complete the defragmentation process will vary based on the size of the hard drive, available free space, amount of data stored on the drive, speed of the drive, and the level of file fragmentation. A badly fragmented hard drive could take hours to defragment, but the handy graphs provided in the Disk Defragmenter interface will constantly update you on the status of the defragmentation, ensuring that your computer is working and not locked up. Frequently defragmenting a hard drive will reduce the amount of time required to perform subsequent defragmentations.

Once the defragmentation process is complete, you can exit the Disk Defragmenter utility. If you performed your defragmentation in Safe Mode,



The integrated Windows XP Disk Defragmenter is a perfect tool to help light to moderate computer users keep their hard drives performing at maximum efficiency.

you will need to restart your computer to put it into Normal Mode again.

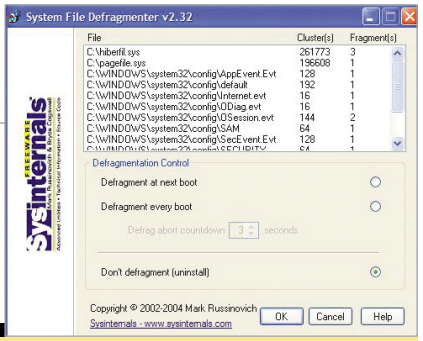
For Windows Vista users, the Windows Disk Defragmenter works in a very similar way, except that all of the progress graphs have been removed and the only feedback you receive is a small box telling you that the computer is defragmenting. Vista computers may experience more fragmentation than WinXP-based systems because of all of the disk swapping that takes place. Consequently, it is important that Vista users defragment frequently to preserve their computers' performance.

To help Vista users in this task, Microsoft automatically schedules a defragmentation to occur every Wednesday at 1 a.m. This will only occur if the computer is turned on, so if you wish to take advantage of the automatically scheduled defragmentation, make certain your computer is powered on overnight on Tuesdays; or you can change the scheduled defragmentation to a more convenient time via your Scheduled Tasks control panel.

Reap The Benefits

Depending on the amount of fragmentation on your hard drive, the performance improvement you experience after a defrag will vary. However, a recent study by Diskeeper Corporation (www.diskeeper.com) found that a brand-new computer with a fresh installation of WinXP can boot about 27% faster after running a basic disk defragmentation. If a brand-new computer can reap the benefits of a defragmentation out of the box, it stands to reason that your system could benefit, as well. ❚❚

BY THOR SCHROCK



The free PageDefrag utility available from the Microsoft Web site allows advanced Windows XP users to defragment the file that Windows uses for virtual memory.

Third-Party Defraggers

Even though Windows comes with its own Disk Defragmentation utility, it does have its limitations. If you want to get the most thorough hard drive defragmentation possible, you may need to download and install a third-party defragmentation utility.

One of Disk Defragmenter's greatest drawbacks is that it cannot defragment files that are in use. While there would be little performance gain from defragmenting most of Windows' system files, defragmenting your Windows page file can make a world of difference on a computer that is short on memory for the workload it is enduring.

When a Windows-based computer is booted, it creates a page file that is used as extra RAM in the event that your computer runs out of physical memory. This page file is increased when the need for additional memory arises, but it typically does not shrink back down once the need for extra memory has passed.

As your page file grows, it becomes fragmented and can contribute to sluggish PC operation. The Windows Disk Defragmenter cannot defragment this file because it is always in use by Windows, so a third-party defragmentation utility is needed to address this and other similar Windows system files.

Microsoft has a free page file defragmentation utility available on its Web site called PageDefrag that was originally developed by Mark Russinovich. The utility will defragment your WinXP page file after a simple restart of your computer. You can download this utility at microsoft.com/technet/sysinternals. (Note that this utility is not compatible with Windows Vista.)

If you are looking for a complete program that defragments everything that can possibly be defragmented on a hard drive, then Diskeeper 2007 Home ($29.95; www.diskeeper.com) is one recommendation. The company offers a free 30-day trial download from its Web site. Diskeeper will defragment your normal files and folders, as well as your page file and many areas that the Windows Disk Defragmenter utility will not touch.

In addition to its thorough drive defragmentation options, the software provides a wealth of graphs that help you understand the current fragmentation status of your hard drive. Diskeeper is compatible with WinXP and Windows Vista. ❚

Troubleshoot That Drive

Tips For Solving Hard Drive-Related Problems

Losing a hard drive can be one of a PC user's most disruptive calamities, especially if he has not been keeping regular backups. Even having a new drive fail is frustrating because it means more downtime.

Fortunately, drive failure is not common—data loss due to human error is much more prevalent. Furthermore, error messages and other drive-related problems do not *always* spell disaster. In this article, we'll examine some of the common symptoms of failing or faulty drives and help you determine the appropriate course of action.

Error! Error!

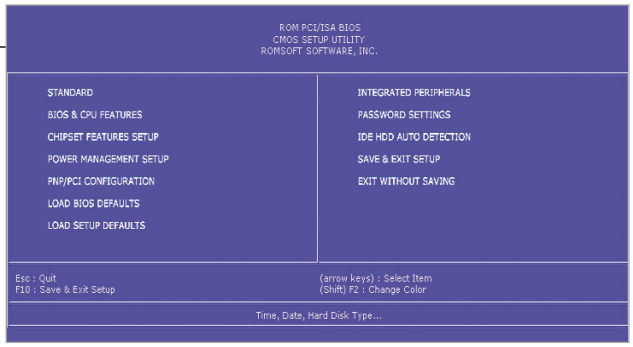
Drive errors can occur from failure caused by age, defective components, or physical damage. However, drive errors can also occur when the drive or the operating system discovers data discrepancies that prevent normal operation. These errors do not always signal a failed drive. If you are seeing an error not listed here, check your PC's documentation for assistance. In addition, if you can access a functioning, Internet-connected computer, note the text of the error and search the Microsoft Knowledge Base (support.microsoft.com) for help with that specific error message.

Errors at startup. Errors that appear on a blank screen before Windows starts are BIOS (Basic Input/Output System) errors. The BIOS is a low-level system that loads a few startup files and then hands control of the system to Windows. Your BIOS can generate dozens of errors and numeric error codes; only a few are drive-specific. Most BIOS drive errors will prevent the system from continuing to load. If you see BIOS errors but Windows is still loading, reboot your system and try to read the errors as they appear.

Error Message: "HDD Controller Failure" or "HDD Failure" or "Hard Disk Install Failure"

Solution: These errors occur because the BIOS does not detect the hard drive. You should first check to make sure that the hard drive is properly connected. It is possible that hard drive connectors or power supply cables are loose or that switches on the drive are set incorrectly. (Review the documentation that came with the drive for help opening your PC and checking for proper connections, or refer to "Install A New Drive" on page 66.) If you recently installed a new drive, ensure that the BIOS sees the drive and is accessing it in the proper sequence. (This process occasionally works with existing drives, as well.)

Using your BIOS (Basic Input/Output System) setup utility, you can determine whether the BIOS sees the drive and is accessing it at startup.



Restart the computer, holding down the F1 key to initiate the BIOS setup utility. If this doesn't work, try pressing the DELETE key at restart or consult your PC's documentation for how to access the BIOS.

When the BIOS setup utility starts, look for a drive setup option (this may be an option called Advanced BIOS Features, Advanced Setup, or similar) and select it. You may need to move through several layers of menus. Use your arrow, ENTER, and/or F keys to navigate within the BIOS setup utility, as the mouse won't work. When you locate the drive setup option, press ENTER. See if the BIOS lists your drive and indicates the correct amount of drive space.

If it does, look for a menu with an option titled Startup Sequence, Boot Order, Boot Device, or similar and press ENTER. Your system drive (usually C:) should be the second or third option in the sequence, after your diskette drive (A:) and/or CD-ROM. If the drive is not listed in the startup sequence, change the selection until it is. Don't put the hard drive first, however. For rescue purposes, your BIOS needs to access a diskette or CD drive before it accesses the hard drive.

If you do not see your drive listed anywhere, look for an auto-detect option (Detect IDE Devices, IDE HDD Auto Detection, or similar option) and allow the BIOS to scan for drives on your system. This feature may also be initiated by changing one of the drive settings from None to Auto. If the setup utility locates your drive, check the startup sequence as described above. Once everything is in order, exit the BIOS and reboot the PC.

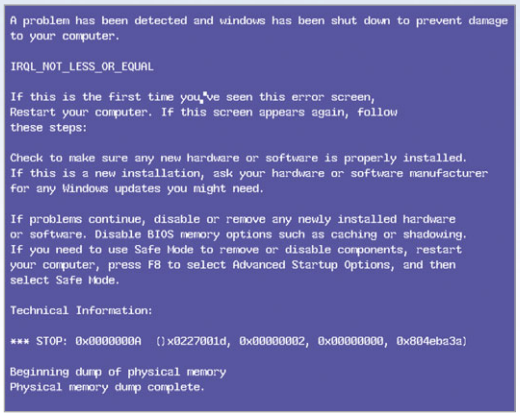
If the BIOS cannot detect your drive and you continue to experience the same errors, it's possible that the hard drive may have failed and needs to be replaced.

Error Message: "Non-system disk or disk error . . . Replace and strike a key when ready" or "Error Reading Media"

Solution: This problem usually occurs because you have a diskette or CD inserted in the PC at startup, and it is not a bootable diskette or disc (containing certain system files). Remove any diskette or CD present and reboot.

If no removable media is present or the error recurs, your BIOS knows you have a hard drive but it does not recognize it as bootable. Check the drive startup sequence in the BIOS setup as discussed in the previous solution. If you have recently installed a new drive, check the BIOS setup for settings that use the terms "Master" and "Slave." Ensure your startup drive (usually C:) is designated as a Master (or Master with Slave, if that is an option). Dual-drive configurations often require one drive to be a designated controlling (Master) drive. If the wrong one is designated as Master, your PC will not boot.

If the drive sequence and settings are correct, someone or something (often a boot virus) may have wiped out your boot sector (startup files) and possibly other files. In this case, refer to the Drive S.O.S. section in this article for assistance.

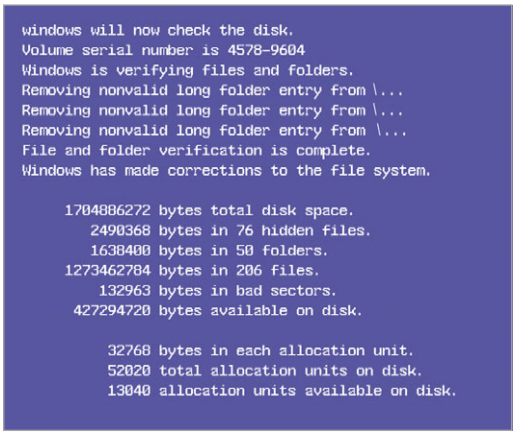


The dreaded BSOD (Blue Screen Of Death) can occur when your drive is failing or for other reasons.

Error Message: "Error Reading Drive C:" or "C: Drive Failure" or "Operating System Not Found"

Solution: These errors occur when the BIOS sees your boot drive (usually the C: drive) but cannot read the files on it. You may have a corrupt or bad boot sector or other system files, or your drive may be failing. Refer to the Drive S.O.S. section in this article for assistance.

Windows errors. If your PC's startup process continues for more than 15 seconds, any error messages you see are likely generated by Windows or its components. The same is true if you see an error message while you are working in Windows. Errors at this point can be taken as good news, as they generally do not indicate total drive failure.



If Windows detects a problem with your hard drive, it may automatically check it for problems and inform you of any bad sectors it finds.

Error Message: "X bytes in bad sectors" (or similar error)

Solution: If, during startup, Windows detects drive problems, it should automatically run an error-checking feature (Chkdsk in WinXP) to examine the drive's integrity. If it runs this scan, it may return an error similar to the above. This error will not display as a standalone

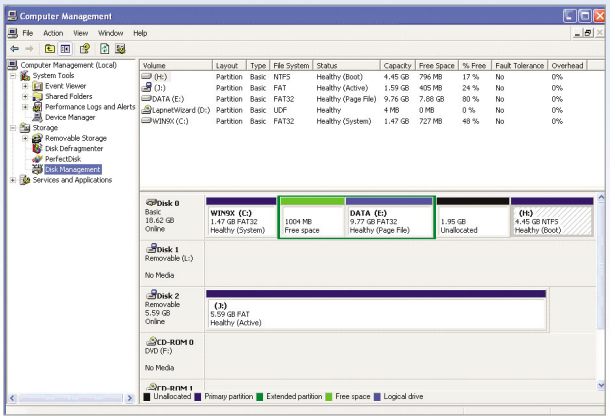
message but rather as part of a diagnostic report.

With this error, Windows has determined that portions (sectors) of your hard drive are not capable of holding data. If those portions contain critical system files, Windows will not be able to start. If Windows continues starting, it has either fixed the problem or marked the bad sectors as unavailable for file storage.

With Windows started, back up any important files and prepare for the eventual, further disintegration of your drive. While some drives with bad sectors continue working for many years, the safest action is to replace the drive as soon as possible.

If Windows will not start, you may be able to reformat the drive, exclude the bad sectors from use, and reinstall Windows. However, you will lose all the data currently stored on your drive, and the drive may still fail. (Refer to the Drive S.O.S. section in this article for further assistance or replace the drive.)

Note that Windows will also run this error-checking utility if the system terminates unexpectedly. If it runs, finds no errors, and restarts normally, your drive is probably fine.



Windows XP's Disk Management utility will give you a snapshot of your drives and can report if they are healthy.

Error Message: "Error Reading Drive X" or "Cannot Write To Drive X" or "Drive X Not Present" or "Unrecoverable Error" (This error can also appear as Read Error, Write Error, or any message with similar verbiage where 'X' represents any drive letter on your system.)

Solution: If you see an error similar to any of the above while working in Windows, it means Windows cannot access a drive or portion thereof on your system. The drive may have bad sectors. If you are saving files to a secondary drive, it also may mean connections are loose. If the drive referenced is external, check your connections and ensure the drive is plugged in and turned on. If the drive referenced is internal, refer to "Install A New Drive" on page 66 or your users manual for help checking drive connections.

Error Message: "[*Program name*] has encountered a problem and needs to close" or "[*Program name*] has quit unexpectedly" (You may also experience a Windows shutdown and see a blue screen that says, "A problem has been detected." This is referred to as the Blue Screen Of Death, or BSOD.)

Solution: An abnormal program termination error in Windows can indicate drive failure, as it may mean the portions of the drive on which the program resides or where it stores files may be failing. However, many other issues, including system corruption and driver incompatibilities, also cause such errors. If you see errors similar to these, skip to the Drive S.O.S. section of this article to determine whether your drive is the culprit.

Physical Symptoms

Physical alerts, such as noises and lights (or lack of them), are good indicators of drive problems. However, they do not always spell serious trouble.

Problem: Your PC makes crunching, whining, or grinding noises.

Solution: Some hard drives are inherently noisy, and not all noises are drive-related. If you hear excessive noise but your PC is operating normally (especially if this is a new PC and you are not used to its sounds), your hard drive may be fine. First, skip to the Drive S.O.S. section below to see if the drive is the culprit. If the drive has problems, back up important data immediately (see "System Savior" on page 60 for instructions on how to use Windows' Backup utility). Replace the drive as soon as you can, as failure will probably follow.

If the drive passes tests, something else such as a fan may be causing problems. A corrupt Windows installation can also cause drive noise, but usually only at startup or shutdown. During operation, see if the noises seem intermittent and occur especially when Windows is accessing the drive (for example, when you open a program, save a file, or when the drive light on the front of your PC flashes). If so, perform a full data backup even if the drive passes the tests you performed,

If our suggestions do not help or indicate your drive has failed or is failing, you can try reformatting it, but this is generally a temporary fix. A better solution, given the low price of hard drives, is replacement.

as the drive could still be nearing the end of its life span.

If, however, the noise occurs only at startup or shutdown, reinstall Windows and see if that resolves the problem. If the noise begins immediately after startup and seems continuous, you can try the drive tests we provide in this article; however, you may also need to use a hardware diagnostic program to isolate the problem. (See Drive S.O.S. for help with both solutions.)

Problem: Windows won't start, and lights on the front of the computer are lit or flashing.

Solution: If both your power button and the hard drive light are lit, restart your computer and watch the hard drive light. If you do not see it flash after a minute, or if it remains constantly lit but never flashes and Windows does not start, it indicates your drive is hanging or not working at all. Refer to the Drive S.O.S. section for further assistance.

Drive S.O.S.

If our prior solutions have not helped or we referred you to this section, it's time to see if your drive is indeed fried (or about to fall into the cooker). Some of our suggestions require access to an Internet-connected PC.

First, test the health of your drive. If you cannot boot Windows, a drive-checking boot diskette may help. Several companies make free drive-checking tools; Hitachi and Seagate offer tools that work on most drives. Hitachi's utility is particularly helpful, coming with an excellent downloadable users manual. Visit www.hitachigst.com/hdd/support/download.htm for the Hitachi Drive Fitness Test; visit www.seagate.com/support/seatools for Seagate's SeaTools.

If Windows will start (WinXP and Vista), open the Disk Management tool. (Windows Me or earlier should go straight to ScanDisk; select the Programs option on the Start menu and choose Accessories, System Tools, and ScanDisk.)

Right-click My Computer (Computer in Vista) and select Manage. Under Storage, click Disk Management. You'll see a snapshot of your drives; check if all are present and if Windows reports they are healthy.

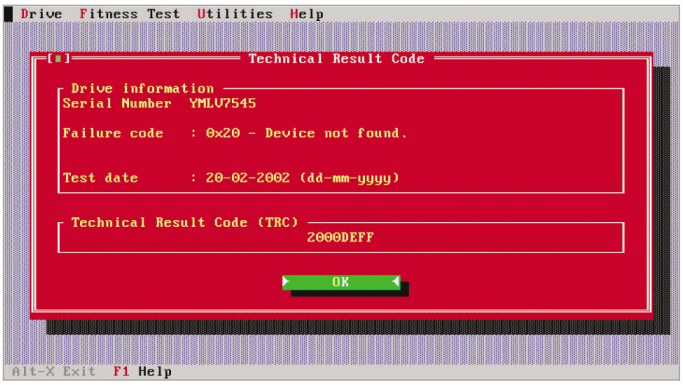
If the problem is with a secondary drive and it is offline or not healthy, right-click it and select Reactivate Disk. If you cannot locate a secondary drive you have installed, Device Manager may help resolve your troubles. Using Device Manager is outside the scope of this article, but you can find instructions by querying the Microsoft Knowledge Base using the search term "Device Manager."

If you locate the problematic drive, right-click it and select Properties. Select the Tools tab, and under Error-Checking, click Check Now. Select both checkboxes to have Windows repair any errors it finds. If the problematic drive is your system drive or contains system files, you'll have to restart the PC. Otherwise, WinXP will check the drive.

If the drive checks out OK and you have antivirus software, update your definitions and run a full-system scan. Virus infection can cause portions of your hard drive to be inaccessible. If your system is clean and you have not defragmented your drive recently, do so. Heavily fragmented drives can occasionally mimic failing ones. (Refer to "Clean It Off: To Defrag Or Not To Defrag" on page 53 for step-by-step instructions on how to use Windows Disk Defragmenter.)

If everything seems fine (or ScanDisk and your antivirus program find and resolve problems) but you continue having issues with a primary drive, consider purchasing a more robust hardware-checking tool, such as VCOM Recovery Commander ($39.95; www.v-com.com) or Hard Drive Mechanic ($69.97; www.higher groundsoftware.com). If you continue having problems with a secondary drive, you can reformat it within Disk Management, but you will lose all the data stored there.

If all these tests indicate your drive is fine, the problem is probably with Windows. Reinstalling it may help, although you may need to perform a clean installation.



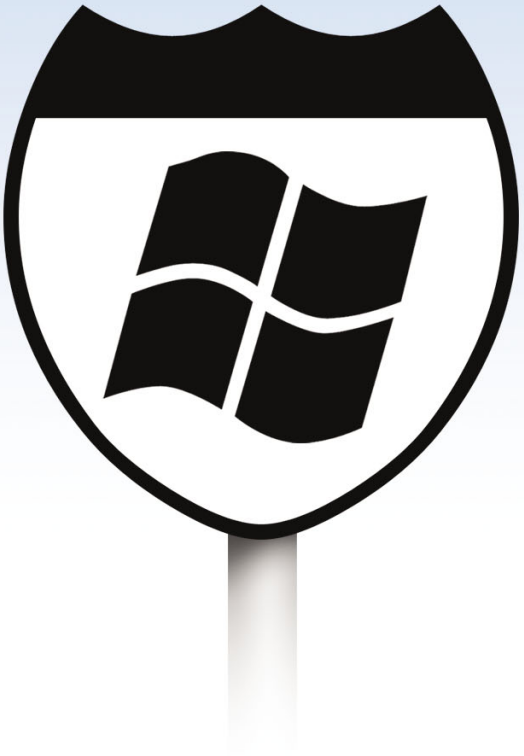
The Hitachi Drive Fitness Test is a free and very helpful utility that can test a drive when your system will not boot.

Get Serious

If our suggestions do not help or indicate your drive has failed or is failing, you can try reformatting it, but this is generally a temporary fix. A better solution, given the low price of hard drives, is replacement.

If you do not have a recent backup of your data and need the information, consider sending the drive to a data restoration service. One such option is Iomega's Data Recovery Service (www.iomega.com/data_recovery). There is no charge if the service cannot recover your data. ■

BY JENNIFER FARWELL



System Savior

Use Windows' Backup Utility To Keep Your Data Safe

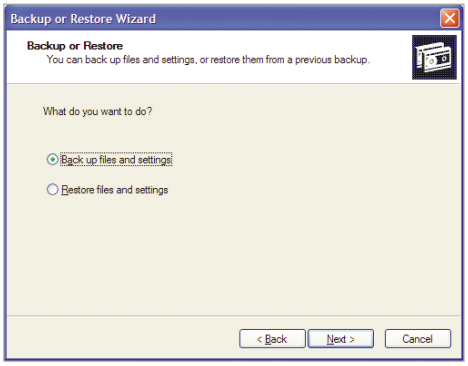
For computer users, disaster can take many forms, from catastrophic, weather-related events to system lockups. Regardless of form, these events can spell doom for data residing on hard drives, and recovering that data can prove impossible if you haven't taken steps to preserve it.

The most effective method for protecting data is by creating backups, or copies of files, folders, and other data that resides on your computer. By performing regular backups, you can always recover your data no matter what happens to your computer—even if you need to replace the machine.

Backup Bonanza

When you see the term "backup," it's easy to assume this refers to the process of backing up *all* data on your computer (or, more specifically, all data on your hard drive). However, regardless of which backup utility you use, you'll encounter different backup methods that preserve varying amounts and types of data.

One backup method is the full backup (occasionally called a "normal" backup), which copies the complete set of files you choose to back up. For example, if you choose all of the folders and files on a hard drive, the full backup will make an identical set of folders and files on your backup medium. Unless you instruct the utility to use compression—which decreases the size of the files to help save on storage space—the full backup will use the same amount of storage space on the backup media that the files and folders use on your hard drive.



Although Windows XP's Backup utility doesn't provide quite the same depth offered by some third-party programs, it nonetheless delivers basic, reliable backup options.

Although the full backup is a powerful method, it's not the most efficient method to use on a regular basis, because it's time consuming and requires plenty of storage space. However, once a full backup is completed, many users opt for another backup method: the incremental backup. Instead of saving all of the same files and folders, the incremental backup stores only files and folders that have changed or been added since the previous incremental backup, substantially decreasing the amount of time required for a backup.

On the downside, restoring data that's been backed up using incremental backups can be frustrating and difficult, because you need to restore the full backup and all subsequent incremental backups to obtain the particular data you need.

A third backup method, called differential backup, can bridge the gap between full and incremental backups. Instead of saving information stored since only the last incremental backup, the differential backup stores changes made since the last full backup. Although differential backups are effective, they must be made on a regular basis and can

consume more resources (such as space and time).

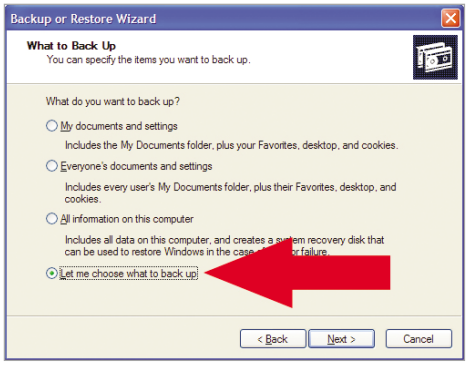
Windows XP To The Rescue

Backup utilities can be found everywhere, from retail software products on store shelves to convenient online backup tools. (See "Back Up Online" on page 21 for more information on Internet-based backup services.) But if you're looking for basic, efficient backup, look no further than WinXP, which includes everything you need to preserve backup copies of important files and folders.

Although preparation for a backup isn't always necessary, there are a few steps you can take to make the process easier, particularly before performing your first backup. For starters, make sure you know where the files and folders you plan to back up are located, because it can be frustrating trying to find data during the backup process. Also, there are some items you might need to create to actually back them up, including your browser Favorites file, an email archive, and similar items.

You should have a list of items you want to back up before you use the Windows Backup utility, because it's easy to forget what you intended to back up once the process actually begins. Keep that list and use it each time you perform a backup so that your backups remain consistent.

Another preparatory step involves your backup location. If you're planning to burn your backup data to a CD or DVD, make sure you have the media ready to go. Likewise, if you're storing it on a USB drive, make sure the drive is plugged in and accessible in Windows Explorer.



When selecting the items you'd like to back up, it's best to choose the files and folders yourself to avoid potentially skipping over important items that aren't stored in the utility's default backup locations.

Start The Backup

Depending on the version of WinXP you're using, you might need to first install the Backup utility from your Windows disc. For example, WinXP Professional installs the utility during installation of the operating system, but WinXP Home doesn't.

If you're using WinXP Home, insert your WinXP CD into your optical drive, double-click the drive icon in Windows Explorer, and double-click Setup.exe to launch the Welcome To Windows XP screen (if you have Autorun enabled, this screen should automatically appear). Click Perform Additional Tasks, click Browse This CD, and then navigate to the VALUEADD\MSFT\NTBACKUP folder. Double-click Ntbackup.msi to install the WinXP Backup utility.

After you've installed the utility (or if you're using WinXP Pro), click Start, choose All Programs, Accessories, System Tools, and then click Backup to launch the Backup

Go Third-Party For Power

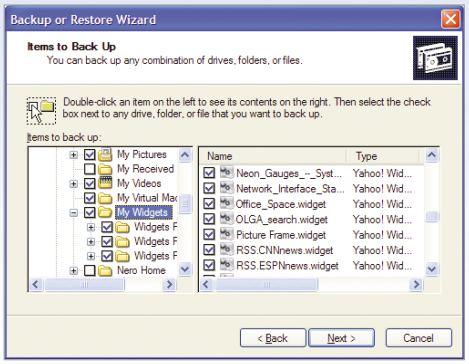
For basic backups, the Windows XP Backup utility is an adequate choice that lets you protect your data with little hassle. However, if you're looking for more advanced options that provide more flexibility and power, consider using one of the following third-party backup programs.

Acronis True Image
$49.99
www.acronis.com
This powerful software lets you make an exact copy of your hard drive, including all of its applications and data. Although creating drive images can require several DVDs, depending on the size of your drive, it's a nearly foolproof method for ensuring that *all* of your data—not just some of it—is secure when disaster strikes.

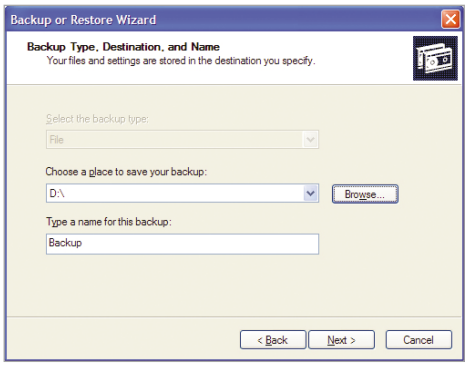
Norton Ghost
$69.99
www.symantec.com
Long considered one of the most reliable third-party backup programs, Norton Ghost provides a wide range of imaging options. This software can make backups directly to just about any media type, including optical discs, and the backups can be encrypted for optimum security. Ghost can trigger backups when key events happen, such as new program installations.

NTI Backup NOW!
$69.99
www.ntius.com
Whether you want to create a complete hard drive image or simply back up a few files and folders, NTI Backup NOW! offers intuitive, easy-to-use tools that help to simplify the job. In addition to multiple device support, the software includes drive spanning that uses multiple optical or hard drives during unattended backup jobs to accommodate large backup files. A $59.99 version without imaging is also available.

Retrospect Express HD
$49.99
www.emcinsignia.com
With a simple point-and-click interface and extensive scheduling options, Retrospect Express HD provides home users with a reliable, hassle-free choice for regular backups. An automatic backup grooming feature removes old backups from your hard drive to allow sufficient space for new backups.



When selecting items to back up, double-click folders to drill down to subfolders and files. When you find items you'd like to back up, simply click to select them.



The WinXP Backup utility will not back up directly to optical media. Instead, save the backup file to your hard drive and then burn it to a disc.

Or Restore Wizard. Click Next. On the following screen, select Back Up Files And Settings and click Next. On this screen, the wizard will ask what you'd like to back up and provides four options: My Documents And Settings, Everyone's Documents And Settings, All Information On This Computer, and Let Me Choose What To Back Up.

The first option (or the second option, if you share the computer with other users) is a wise choice if you want a quick, hassle-free backup that targets your primary files and settings. However, Windows backs up only certain files residing in certain locations if you choose these options. As such, if you have important files stored in locations other than your My Documents folder, these files will not be included in the backup.

The third option (All Information On This Computer) leaves nothing to chance, backing up everything on your computer and creating a system recovery disc in case of an emergency. Although this option is certainly thorough, it can require huge amounts of storage and generally isn't an efficient choice. If you do require complete snapshots of your hard drive, consider using an imaging (or cloning or ghosting) program instead (see the "Go Third-Party For Power" sidebar).

If you prepared your files and folders for backup as previously suggested, the fourth option (Let Me Choose What To Back Up) is your best bet for backups. This option lets you select precisely what you need, in turn allowing you to control the size and scope of your backups. The following example will describe how to perform a backup using this option.

After selecting Let Me Choose What To Back Up and clicking Next, you'll see a dialog box that looks similar to Windows Explorer, complete with a tiered file system. All of your computer's drives and all the folders they contain are included here, along with a My Documents selection. Double-click My Documents to select specific folders you'd like backed up here, such as My Pictures, My Music, or other important folders.

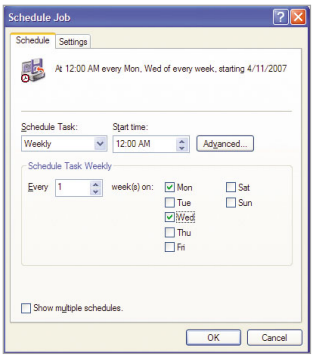
After you've selected the files you'd like to back up, click Next. On this screen, you'll need to choose a location where the utility will store your backup file. Unless you've backed up just a few small files, you'll need a location larger than your floppy drive (which the utility defaults to on certain computers, depending on the configuration). If you have an external USB drive, store the file there, but if you don't, store it somewhere on your hard drive and burn it to a CD or DVD after the process is completed.

To select a backup location, click the Browse button, choose a folder, and click Save. Enter a name for your backup (the default name is Backup), click Next, and click Finish on the following screen. A progress window will appear that details the backup task as it's happening and notifies you when it's complete. Click Close.

Use A Schedule

Not everyone is sufficiently disciplined—or organized—to initiate regular backups, but it's important to back up files on a consistent basis—such as weekly—to ensure that recent data is available when you need it. However, if you feel you won't remember to perform backups, you can use the WinXP Backup utility to create a schedule that will perform backups at an interval of your choosing.

To access this schedule, launch the Backup Or Restore Wizard, select the files you want to back up, select the backup location, and click Next. On the Completing The Backup Or Restore Wizard screen, click the Advanced button and then click Next three times. On the When To Back Up screen, click Later, enter a job name, and click Set Schedule.

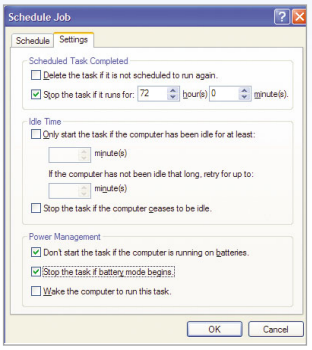


If you don't have the time or discipline to regularly conduct backups, use the Schedule Job tool to arrange automatic daily, weekly, or monthly backups.

On the Schedule Job screen, you can

Not everyone is sufficiently disciplined—or organized—to initiate regular backups, but it's important to back up files on a consistent basis

use the Schedule Task drop-down menu to choose a backup interval. You can choose backup intervals of once, daily, weekly, monthly, at system startup, or others. You can also choose a start time, or, if you'd like to run the backup once on a later date, you can select a day under Schedule Task Once. If you click the Advanced button, you'll have access to even more options, including the ability to repeat the task every so many minutes or hours.



Don't worry about your automatic backups draining system resources; you can instruct the utility to stop during battery time or when the computer isn't idle.

On the Settings tab, you can specify other options that can help your backup run most efficiently. For example, power management options will prevent the backup from running if the computer is operating on batteries. You can also instruct the utility to perform backups only if the computer has been idle for a specified amount of time, and to stop the backup if the computer ceases to be idle.

After you've finished entering your backup options, click OK. You can also access other backup options after clicking the Advanced button on the Completing The Backup Or Restore Wizard screen. On the Type Of Backup screen, you can use the drop-down menu to select from the following types of backup: Normal (marks each file as backed up), Copy (does not mark the files as backed up), Incremental, Differential, or Daily.

On the following screen, you can choose to: Verify Data After Backup; Use Hardware Compression (If Available); and/or Disable Volume Shadow Copy (this feature can back up files even when they're in use). On the next screen, you can instruct the utility either to replace the existing backups or to append the new backup to any existing backups.

Stay Diligent

To restore your backups, open the Backup Or Restore Wizard, click Restore Files And Settings, and click Next. Double-click a backup to view the contents of the Backup file, select the checkboxes of the files or folders you want to restore, and then click Next. Click Finish on the following screen. The utility will create a System Restore point and then restore your data.

Although the Backup utility included with WinXP does a fine job of backing up files and folders, it won't remind you to perform backups, so be sure to use the scheduling tool to perform regular backups.

Also, if you're burning your backups to an optical disc after saving them to your hard drive, consider using a CD-RW (CD-rewriteable), which you can reuse as often as you'd like. ❚❚

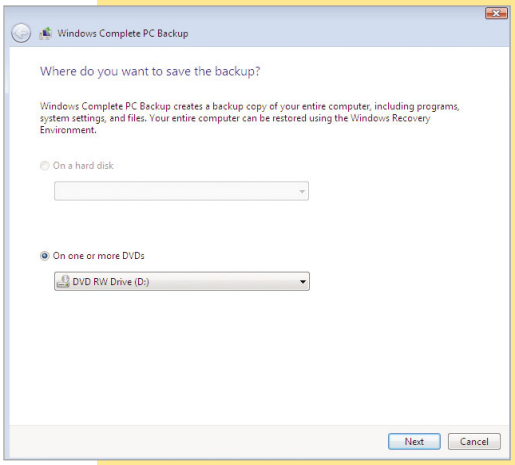
BY CHRISTIAN PERRY

Vista Ramps Up **Backup**

Like Windows XP, Windows Vista also includes a basic utility that provides everything you need to back up your important data. However, Vista improves upon WinXP's technology in several areas.

Although it's possible to create scheduled backups in WinXP, Vista includes a far more intuitive wizard that helps you more easily select the day, time, and interval of your backups. You'll also have access to previously backed-up versions of files that you can access in the file properties (on the Previous Versions tab). Furthermore, a recovery wizard eases the process of restoring files and folders, asking you for your backup storage medium and then simply restoring the data.

A common complaint among users of previous Windows versions centered around the inability to use Windows Backup utilities to back up an entire PC. In the Business, Ultimate, and Enterprise editions of Vista, you'll have the ability to do just that, thanks to the Complete PC Backup And Restore feature, which uses image-based backup to store all of your data—including the operating system. ❚



If you're using Vista Ultimate, you'll have the ability to back up your entire hard drive as an image, including operating system and programs.

Clear Out The Clutter

Tips To Help Clean & Maintain A Hard Drive

You know the feeling: The longer you own your computer, the slower it gets. At first, applications take longer to load than before. Then the sluggishness creeps into everything you do; from starting up your computer and opening files to accessing Web pages and more.

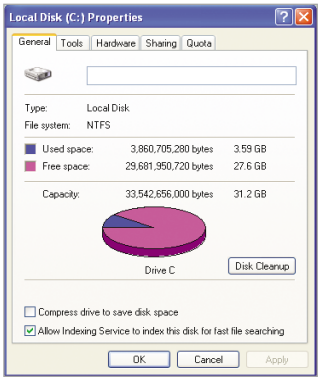
It turns out that, with a little spring cleaning, you can restore some of the speed that you formerly enjoyed. Your computer's hard drive is like your home—the fewer boxes you pile in the hallway, the easier it is to move around.

Every time you use your computer, you're constantly generating new files. It's not just your pictures and letters, either. Programs write temporary files to store saved data, Web browsers cache pages so you can view them faster, and the Windows Registry stores the settings of programs you've long since removed. There are many sources of extraneous files appearing on your hard drive, most of which appear without your direct intervention.

Use Built-In Tools

Windows provides its own tools to help you wrangle the junk files that clog up your hard drive. The Disk Cleanup tool in Windows XP (accessible through the Start menu, All Programs, Accessories, and System Tools) provides a summary of the following types of throwaway files.

Downloaded Program Files. Windows may download built-in Java applets that you use online, such as chat clients, video viewers, or games, and save them on your hard drive. If you use any of these applications frequently, you may decide to keep them. Click the View Files button to confirm what applications have been downloaded. If you only want to remove some, move those files to your Recycle Bin and deselect the Downloaded Program Files checkbox in the Disk Cleanup utility.



When you right-click your hard drive in Windows Explorer and choose Properties, you'll get a nice graphical layout of your free space (in purple). If there's more blue than purple, you are probably starting to see performance decline. Click Disk Cleanup to take the first step in cleaning the clutter off your hard drive.

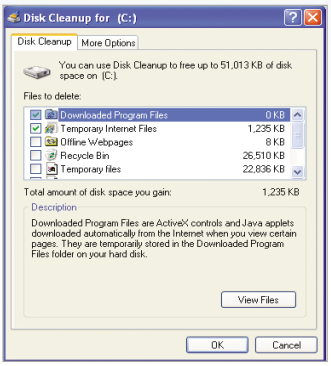
Temporary Internet Files. When you browse the Web, Internet Explorer will store code and images in a special cache to help Web pages load faster the next time. There's no harm in removing these files, as the browser will reload only what you need next time you visit a site. In fact, removing these files regularly will spare you from the potential problem of viewing any outdated Web pages. When a Web site updates frequently, Internet Explorer may display the old version of the Web page that's stored in your cache. By removing these files, you'll ensure that you're viewing the live version.

Recycle Bin. When you want to delete a file, you move it to your Recycle Bin. But that's only a temporary holding place for your files; they're still accessible and taking up space on your hard drive. You can

click View Files to ensure that the contents of the Recycle Bin don't include something you really didn't mean to dispose of.

Other files. The remaining options available in Disk Cleanup depend on the version of Windows you're running. Some items include Temporary Files, Temporary Offline Files, Offline Files, and Compress Old Files. It's likely that you will have no need for any of these files, as they are items that are left behind by other programs.

Beside each file type is the amount of space those files are taking up. Place a check mark beside any given category and click OK, and Windows will remove those files.



Disk Cleanup lists the temporary and otherwise disposable files that take up room on your hard drive. Select the categories you feel comfortable disposing of and click OK.

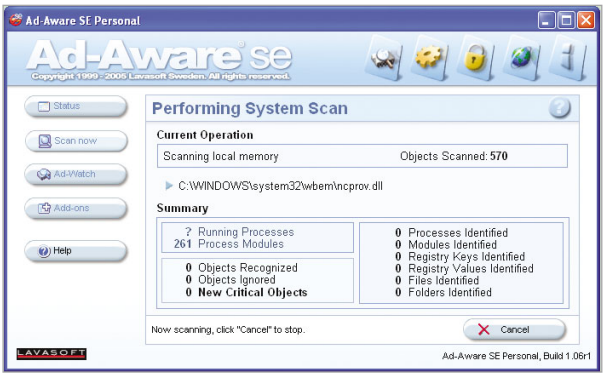
Go After The Nasties

Windows' built-in Disk Cleanup tool is great for removing the files that you—either directly or indirectly—create. But there's another class of files that often take up space on your hard drive and are there without your permission. They fall into two categories: trial software and malware.

Trial software. If you bought your computer from a big brand-name vendor such as HP or Dell, you'll find the Desktop littered with trial offers from ISPs (Internet service providers), antivirus companies, business software companies, and more. Most, if not all, are programs you have no intention of using. Fortunately, most of this software is fairly well-behaved. Open Add Or Remove Programs in the Control Panel and remove any that you don't wish to use. While you're there, remove any software that you may have installed yourself and no longer use.

Malware. You're probably already familiar with this class of software: Trojans, worms, and viruses that you might pick up while using email, browsing the Web, or installing less-than-legitimate software. Unfortunately, this type of software sometimes goes to extreme lengths to prevent its own removal; it certainly doesn't appear in the Add Or Remove Programs list. For these situations, there is specialized software available to remove malware from your computer. One of the best-regarded tools is Lavasoft's Ad-Aware SE Personal (free; www.lavasoftusa.com/software/adaware), which removes a great deal of malware by providing a mechanism to update its definitions, much like an antivirus package.

Viruses are another matter. Ad-Aware won't remove this software; instead, look to specific software packages such as Norton AntiVirus ($39.99; www.symantec.com). However, if you're looking for something that won't cost a monthly fee or for a subscription, consider an open-source alternative such as ClamWin (free; www.clamwin.com). The regular virus definitions don't update as frequently as they do for commercial vendors, but it should be enough for most users.



Lavasoft's Ad-Aware SE Personal is a free malware scanner that can be updated with new definitions as more threats are created.

For Advanced Users

If you've taken all the steps up to here, you should find your hard drive emptier and running faster. But for more advanced users, and especially those who hate the thought of unnecessary cruft filling their drive, there is one more place to look: the Windows Registry. The **Registry** is a central storehouse for all your operating system and program settings. When applications are uninstalled, they sometimes neglect to remove their entries from the Registry. This can be a problem not just because of the space these settings take up, but because of the performance and stability problems that can ensue when the settings are misentered.

You can edit your Registry manually, but a mistake could render your system unbootable. Fortunately, with some tools available in addition to some comfort with your system, you can safely edit your Registry. Our favorite utility is Registry Medic ($29.95; www.iomatic.com), which is easy to use and very comprehensive. It flags Registry entries in a number of different categories. Look for hints as to what program created the error; if you're uncertain, don't remove it. On our test system, Registry Medic found 176 problematic entries.

Every Bit Counts

Your hard drive is made to be filled. Every program on your computer is working hard to do just that. With some ongoing maintenance, you can slow the tide and ensure your machine runs like new for longer. ■

BY AARON VEGH

Install A New Drive

Give Your PC Some Elbow Room

Today's hard drives are cavernous by the standards of even a few years ago, but the space requirements of digital video, audio, and pictures—not to mention today's larger programs—can make even the highest capacity hard drives seem inadequate. Using a computer with a completely full hard drive not only prevents you from installing new programs or adding new files, but it also has the potential to seriously degrade system performance.

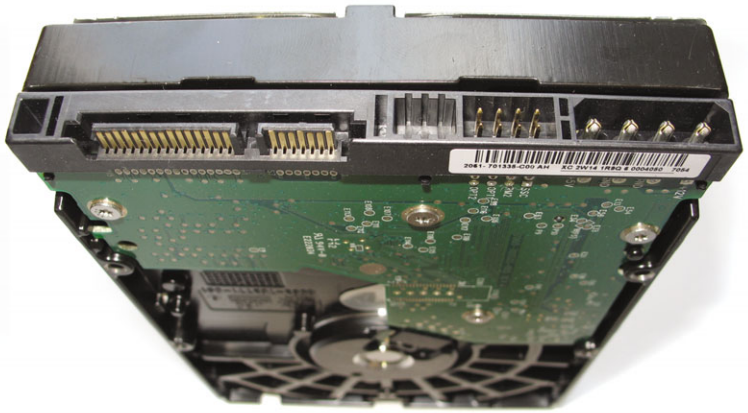
Most people balk at the prospect of replacing their existing hard drive with a more capacious model because they think that doing so involves reinstalling Windows and all of their programs from scratch. This is often the best method because a clean installation of Windows allows for maximum performance, but there are a few ways to add more storage space to a computer without having to reinstall Windows.

Hardware Buying Tips

When buying a hard drive, you want one that uses the fastest interface your computer supports. For most consumer PCs, this means some form of PATA (Parallel ATA; Advanced Technology Attachment), which was formerly called IDE (Integrated Drive Electronics), EIDE (Enhanced IDE), and ATA. Another common interface used by consumers is the newer SATA (Serial ATA) interface. The fastest PATA interface is PATA/133 (often called Ultra ATA/133), and the fastest SATA interface is SATA 3.0Gbps (gigabits per second), which is sometimes called SATA/300. (Smaller numbers after the slash represent slower interfaces.)

There are also a few specifications to pay attention to when purchasing a new hard drive. Make sure it operates at 7,200rpm or faster, as slower speeds hurt performance. Hard drives come with integrated memory chips called caches or buffers that smooth the flow of data back and forth between the drive and the rest of the computer; models with 16MB or more of cache memory operate more efficiently than those with 8MB or less cache memory.

Don't forget that the new drive must be powered. All PATA drives



Some SATA (Serial ATA) drives have a legacy Molex power connector (shown on the far right) in addition to a SATA power connector (shown on the far left), but they only use one or the other.

and most SATA drives accept power from 4-pin Molex connectors, so be sure your power supply has a spare connector that can reach the new drive. SATA drives also have their own special power connector that should always be used in favor of (but not in addition to) the Molex connector whenever possible. Some newer SATA drives don't accept power from the Molex connector at all, so be sure your PC specifically supports SATA's 15-pin power connector if you plan to use that type of drive.

Finally, if you plan to purchase a hard drive online, beware of seemingly inexpensive OEM (original equipment manufacturer) drives, which are sometimes called "bare" drives. They often lack the cables, mounting hardware, documentation, or installation software that boxed retail versions include.

Add Space Without Reinstalling Windows

If you don't want to reinstall your operating system, then there are two ways you can get more space while maximizing performance. The first is to simply add the second drive and leave the existing drive as is, and the second is to transfer your existing operating system (and all other data) to the new drive. Either way, the initial installation and formatting steps are the same, but things get a bit more complicated if you want to transfer everything from the old drive to the new one.

Method 1: Add A New Drive, Keep The Old One

If you want to just add more storage space without disturbing anything on the original drive, the process is straightforward.

Step 1: Prep the new drive. If you have a PATA drive, you'll likely need to adjust the small plastic jumper blocks on the back. PATA drives can operate in one of three modes: Master (primary), Slave (secondary), or CS (Cable Select, where their position on the cable determines their status). The original drive should be in either Master mode or CS mode. If it uses CS, make sure it is connected to the black end of the interface cable (the blue end plugs into the motherboard). The secondary drive should be configured in Slave mode if the original drive is set to Master, or it should use CS if the original uses CS. The proper jumper settings are often found printed directly on the drive itself, but you may need to refer to the users manual.

The white plastic connector in this picture is a 4-pin Molex power outlet, which is connected to a SATA power connector adapter.

SATA drives usually require no special preparation before they are mounted, but check the motherboard to make sure there is a port to accept the interface cable because each drive requires a separate cable. If you have a SATA 3.0 drive but your motherboard only supports SATA 1.5 (check with the manufacturer), you may need to add a jumper block to the back of the drive that forces it to use SATA 1.5 mode. Instructions for this are in the drive's manual.

Step 2: Install the new drive. Make sure the PC is turned off, and if the case uses special mounting equipment, attach it to the new drive in the same way it is attached to the existing drive. If drives are mounted using screws, use all four screws to minimize vibration and reduce noise. Only touch the drive by the metal part of its case (don't touch any exposed silicon or solder), and be careful not to drop it because hard drives are extremely fragile.

Once the drive is mounted, you can connect the interface and power cables. Two PATA drives can share the same interface cable, so attach the new drive to the empty port on the interface cable (the gray port on a CS cable). Plug in the 4-pin Molex power connector, and the drive is ready to go.

If you have a SATA drive, connect one end of the interface cable to an empty SATA slot on the motherboard and plug the other end into the back of the drive. Plug in the SATA power connector if one is available; if not, plug in a 4-pin Molex power connector.

Step 3: Adjust the BIOS. Your computer's BIOS (Basic Input/Output System must be configured to recognize the new drive. There's no such thing as a standard BIOS, so the specific adjustments are only found in your computer's manual, but there are some basic steps that all PCs share.

When you first boot the computer after adding the new drive, look for an on-screen message that tells you what key to press to access the BIOS. Usually this is F1, F2, F8, or F12, so try tapping those keys immediately after turning on the computer if you don't see a message. You need to find the settings for the hard drives, make sure the BIOS "sees" the new drive, and then use the menu settings to configure the drive's interface and features. Save any changes you make before exiting the BIOS. When the computer reboots, don't do anything until Windows loads.

Step 4: Format the new drive. A new drive must be formatted before the

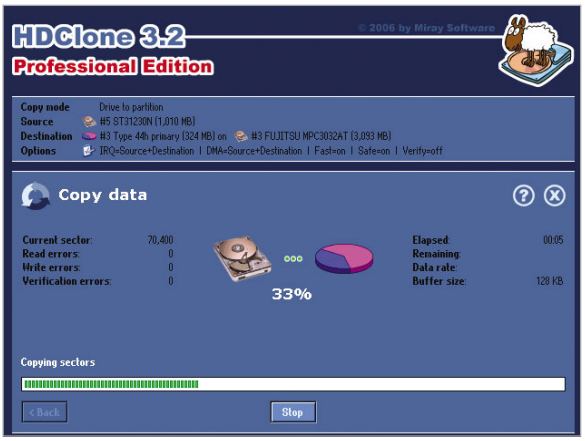
operating system can use it. The drive likely came with formatting tools and directions, but if not, you can use Windows. In Windows XP, click Start, click Control Panel, click Performance And Maintenance (in Category View), click Administrative Tools, and double-click Computer Management. Click Disk Management, right-click the box associated with the new drive (likely labeled Disk 1), and click Initialize. Click Next, right-click the box again, and click New Partition. Click Next, select Primary Partition, click Next, make sure Partition Size matches Maximum Disk Space, and click Next. Assign a drive letter or let Windows assign it for you. Click Next and then use the drop-down menu to select a file system (NTFS [NT file system] is recommended). Leave the other settings alone, click Next, and make sure the computer isn't powered down until the formatting session is complete.

In Windows Vista, right-click Computer and click Manage. Double-click Disk Management, click OK (if necessary), and right-click the box associated with the new drive (again, likely labeled Disk 1). Click New Simple Volume, click Next, click Next, use the drop-down list to select a drive letter, and click Next. Make sure NTFS is selected for the file system, use the Default setting for the Allocation Unit Size, and click Next. Double-check the settings, click Finish, and make sure the computer isn't powered down until the formatting session is complete.

The new drive is now ready to use, although you should reboot the computer and make sure the settings are correct before transferring any files to it.

Step 5: Move files. Once the second drive is installed, you can free up space on the first drive by copying documents, music, and video to the second drive. Don't move program folders—especially Windows folders—from the first drive to the second drive, or your programs (or Windows itself) will no longer function. Putting programs on the second drive requires uninstalling them and then reinstalling them, specifying the second drive during the reinstallation process.

Be aware that when dragging and dropping files between drives, the files are copied instead of moved. This is great when you want to make backups, but not so great when you're trying to clear space on one drive by shuttling data to the other drive. Use the right mouse button instead of the left mouse button when dragging files; a context menu will appear when you release the mouse button. Click Move Here to move the files or click Copy Here to copy files.



Never make a drive-to-drive copy by dragging and dropping in Windows. Instead, use a utility such as HDClone that can copy the drives before Windows even boots.

Method 2: Copy The Old Drive To The New Drive

If you want to transfer your operating system and all of its data from an old drive to a new drive, use the first four steps outlined above to prep and install the drive, configure the BIOS, and format the drive, but then use the following steps to complete the installation. (We recommend you back up all of your important files before initiating the copy.)

Step 5: Clone the drive. Copying Windows from one drive to the other is not as simple as dragging and dropping files. You need special drive cloning software such as Norton Ghost 10 ($69.99; www.symantec.com), HDClone Free Edition (www.miray.de), or the software that comes with many retail hard drives. Most cloning software must load before Windows boots, and doing so may require configuring the BIOS to boot from a CD instead of from the hard drive. Once your PC is set to boot from a CD, insert the CD in the drive, and reboot the computer.

When the cloning software loads, use the instructions that came with the software to copy the contents of the original drive to the new drive. Don't power off the computer until the copying process is complete.

Step 6: Reconfigure and swap. Once the drives are cloned, you can turn off the computer, remove the new drive, configure it to Master mode if necessary, and then use it to replace the original drive. Boot the computer and Windows should load, only now it is located on a drive that is presumably roomier and faster than the old one.

The Best Of Both Worlds

Feel free to combine both methods to maximize hard drive space by adding your old drive to the PC as a secondary drive. Just install and format the old drive using the same steps outlined in Method 1, and you'll have two drives for the price of one. However, make sure you use the new drive for a week or two to see if it works properly before formatting the old drive. **II**

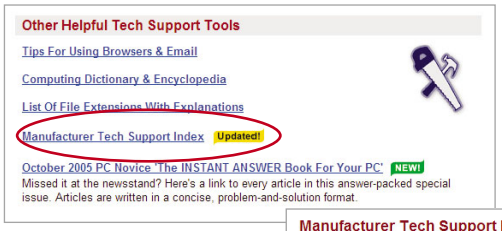
BY TRACY BAKER

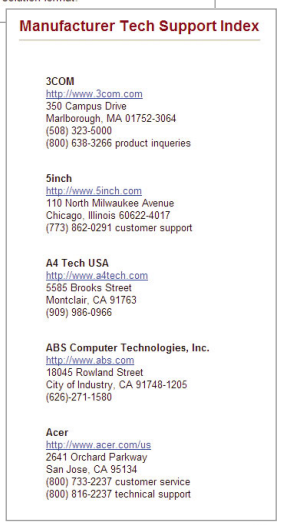
Manufacturer Index

Technology can be a wonderful thing. But, what happens when your computer, router, or software program goes on the fritz? How are you going to fix it? Better yet, *whom* can you contact to fix it? When you need to contact a manufacturer for tech support but can't find information about that company, look no further! SmartComputing.com's Tech Support Center provides a list of manufacturers from D-Link to Netgear, and from Dell to Xerox.

Tech Support CENTER

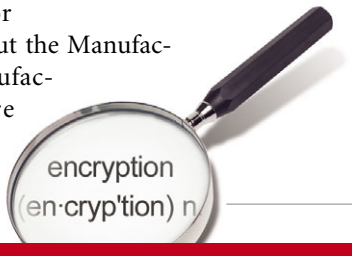
1. Go to www.smartcomputing.com and click the Tech Support Center link.
2. Scroll down to the bottom of the page and click the Manufacturer Tech Support Index link under the Other Helpful Tech Support Tools section.





3. Manufacturers are listed alphabetically, so you can find contact information quickly and easily. We provide each manufacturer's Web site address to make finding answers simple. Customer phone numbers and addresses are also listed.
4. Be sure to check out the hardware and software vendor contact information at the bottom of the page, as well. The links will connect you to Microsoft's vendor contact information lists. The lists are quite extensive and contain a wealth of information in one easy-to-navigate location.

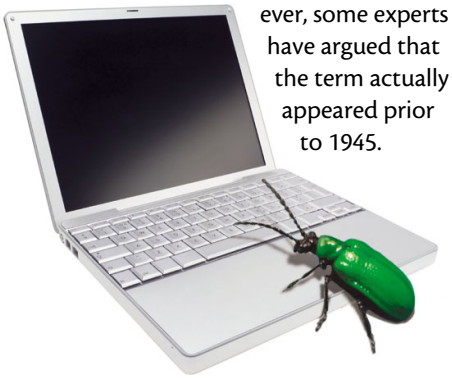
The next time your router goes haywire or your software isn't working properly, check out the Manufacturer Tech Support Index, contact the manufacturer directly, and get the answers you're looking for today!



We searched SmartComputing.com for July-related items to honor the mid-summer month. "Old Glory" appears about 57 times, "fireworks" 107 times, "barbeque" five times, and "sweltering heat" six times.

Find links to the latest tech-related news at SmartComputing.com under Web Logs.

July is National Picnic month, which means it's also National Bugs Where You Don't Want Them month. According to our dictionary, "The first computer bug is said to be a moth found in ENIAC, one of the first digital computers, in 1945. The moth caused a malfunction after being crushed between two electrical contacts." However, some experts have argued that the term actually appeared prior to 1945.



From *Smart Computing's* Dictionary

encryption Encoding a file to prevent others from accessing its contents. An encrypted file appears as a string of gibberish. Users must decrypt the file to read or use it. Files are usually encrypted using encryption programs.

Browsers

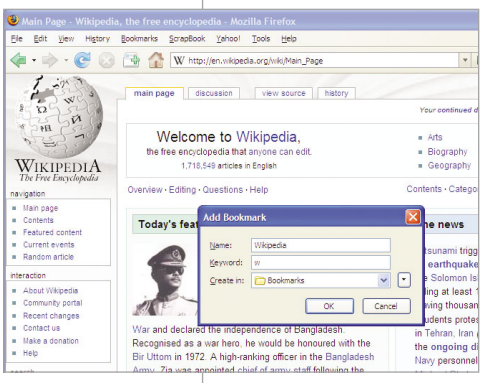
Browse With Keywords In Firefox

Firefox

Beginner

If your mouse is dragging you down while you browse the Web, forget some of that weaving and clicking and dive into Firefox keywords instead.

Keywords are user-definable letters, abbreviations, or words entered directly into the Address bar to tell Firefox where in the vast interwebs you want to go. Keywords come into play in two main ways within Firefox—they can be assigned to bookmarks, as well as searches. In this month's article, we'll take a look at both.



Firefox's keywords feature lets you assign short nicknames to Web pages and Web searches and then quickly access those pages simply by entering the nickname you chose rather than the full Web address.

Shortcut

First, you can use keywords to make it easier to access favorite sites. Any existing Firefox bookmark can be given a keyword. After you assign a keyword, you can simply enter the word or letter combination into the Address bar, and Firefox automatically loads up the requested page. For instance, instead of entering "http://www.gmail.com" in the Address bar or laboriously reaching for your mouse to click some bookmark, you could just enter "gm" or any other letter or word combination you choose as a keyword for Gmail. Using the selected keywords, Firefox instantly navigates to the correct page.

You can assign keywords to as many or as few bookmarks as you want. To give a bookmark a keyword, click the Bookmarks menu and choose Organize Bookmarks. Scroll to the bookmark you want to assign a keyword and right-click it. From the context menu, select Properties. The small window that appears includes a Keyword field. Enter letters or words in this field to assign as a keyword for the selected Web site and click OK. Choose other bookmarks you visit a lot and assign keywords to them, as well.

Now, test the keywords you created. Go back to the main Firefox screen and click in the Address bar at the top of the window. Type one of your keywords and press ENTER. Firefox should head to the requested page.

To really make keywords worth your while, drum into your fingers this key combination: CTRL-L. Rather than taking your fingers away from the keyboard to click in the Address bar using your mouse, simply press CTRL-L; whatever text currently appears in the Address field will be highlighted. You can immediately type a keyword and then press ENTER to visit one of your bookmarked pages. Besides moving the cursor to the Address bar in one keystroke, this method eliminates the need to click multiple times in the Address bar to highlight and delete the current text. With CTRL-L (pressing F6 also works), keywords jump far beyond mouse clicking in terms of efficiency.

Quick Search

Firefox also uses what it calls smart keywords, which go a step beyond normal keywords and work great for search sites. With a smart keyword, you can enter a search site's keyword (say, G for Google) and then search terms. Press ENTER, and you'll go directly to search results for the terms you typed. It's like going to Google without loading up a separate page first.

To set up a smart keyword, browse to the search page you want to access quickly. Right-click in the actual search field on that page and choose Add A Keyword For This Search. In the Add Bookmark dialog box, enter the site name and chosen keyword. Click OK. From now on, satisfying an urge to search the Web can be accomplished just by pressing CTRL-L and typing a keyword and search terms. This technique uses no lumbering mouse movements and doesn't require browsing to a new page.

The quickest keywords are really just key letters: Assign your searches and bookmarks to a single letter, and you'll be able to get where you want with just a few keystrokes. For instance, Google could be G. From then on, you can search the Web just by pressing CTRL-L, entering G and the search term, and pressing ENTER. A short keyword or letter makes searching from the Address bar equally as convenient as the built-in search bar, which you could remove to free up screen space.

Making keywords pay off takes some practice and some time. Fingers used to diving for the mouse need to be retrained a bit until the key combinations are second nature. Before long, you'll be browsing to your most-viewed sites faster than ever before.

BY ALAN PHELPS

Online

Jott It Down

Jott

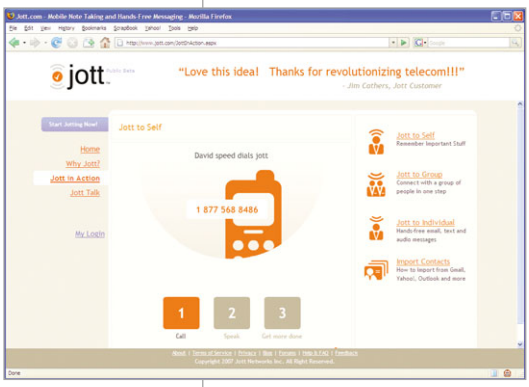
Beginner

Inspiration can strike anytime and anywhere. So can items you should put on your grocery list, the name of someone you're supposed to call, or a task that you need to get done. Rather than jot down a note to yourself on a napkin or notepad, pull out your cell phone and Jott it to your email account.

Jott is an online service that transcribes short audio phone messages into text and sends them to your email. It's potentially addictive, and even better, it's free. Try it out at www.jott.com. Setting up the service requires a phone. You'll need to enter the phone number from which you'll usually be calling the system (you can add other numbers later) and then actually call Jott from that phone to validate the number.

Jott Along

Once your Jott account is set up, using the service is as easy as making a phone call. Just dial the toll-free Jott number (you'll probably want to program it into your phone) and wait for the Jott voice to ask who you want to Jott. If you are sending a message to your own email, you'd answer "me" or "myself." Jott plays a short tone to let you know it's time to begin talking.



Jott turns short phone messages into text. Call the toll-free number, speak your message, and see it arrive transcribed in your inbox a few minutes later.

You can speak as you normally would; it's best to slow down just a bit and try to enunciate clearly, but there's no need to go overboard. Jott waits a couple of seconds after you're finished talking and then confirms the message was received by saying "got it." That's your cue to hang up or wait for the introductory message to Jott again.

You'll see your new Jott message show up at the Jott site pretty quickly, but at first, the message only indicates that it is waiting to be transcribed. That can take a few minutes, and it might take a few minutes more before the message is forwarded to your email address.

The Jott inbox lists all of your messages chronologically. The first sentence or so, depending on your screen width, is visible as a kind of subject line. To see the full message, click the subject line. Small links appear to the left of the message text. One of them, Listen To Jott, takes you to another screen where you can play the actual audio file of your phone call. This is a great follow-up when you're not sure if the transcription worked properly.

From the inbox, you can delete or archive messages, much as you would in email. Messages can also be added to different categories, such as Work and Home, so you can sort them. New categories can be created from the main inbox screen; simply click New Category near the top of the window.

Other buttons in this area include New Jott and Send Jott. New Jott simply lets you add a text message to the Jott inbox, which might be handy if you use Jott as a to-do list and don't need to phone everything in. Send Jott is what you might think—a way to send Jott messages, including the audio if you like, to anyone's email address.

Jott About

Jott need not be a solitary activity. You can send Jott messages to anyone with a phone or email address, and you can also send Jotts to groups of people.

On the main Jott screen, click the Contacts tab and click New Contact. Enter the person's name and contact info and click Save. Next time you dial the Jott phone number, you can say the name of the contact to send your message to him instead of to yourself.

To send a Jott message to a group, head back to the Contacts screen and click New Group. Enter a group name—this is what you will say to send a message to the group—and then enter names in the field below. Jott will match up the names as you type with contacts you've already entered. Click Save when you've finished.

We had a bit of trouble in our test when sending a Jott to a contact. The Jott arrived in our recipient's inbox, but it said "waiting for transcription" rather than the message we intended. When we attempted to send a Jott message to the contact's phone, we got a cryptic "delivery error." At press time, Jott was definitely still in beta, but even so, it can be pretty remarkable.

BY ALAN PHELPS

Quick Studies
How-To

Excel 2002

Troubleshoot Chart Formatting

Spreadsheet

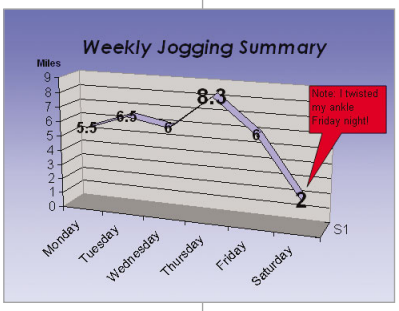
Intermediate

2002 for Win9x/NT 4.0/2000/XP

Last month, we walked through the basic steps of creating both instant charts with Excel's Chart button and more customized charts with the Chart Wizard. Odds are, as soon as the chart appears on-screen, you'll find some things you don't like about it. So this month, we cover solutions for some of the most common chart formatting headaches.

This sounds silly, but why can't I find the chart I just created?

When you create a chart using the Chart Wizard, the last screen gives the option of creating the chart on the current worksheet or on a new worksheet. If you selected a new worksheet, look for and click the tab at the bottom of the screen labeled Chart1. To move the chart to another worksheet, click the chart to select it and then choose Edit and Cut. Go to the worksheet where you want the chart to appear, click a spot on it, and choose Edit and Paste.



Your chart's main points don't have to get buried. Use tricks such as Callouts and formatted fonts to draw attention to the main ideas.

How can I see exactly what values the parts of my chart represent?

Many charts make it hard to see the difference between a salesperson who sold 527 blenders and one who sold 534. You can get the exact number by resting your pointer over a chart item. The pop-up label's Value section tells you the bar's exact quantity.

To make the value appear at all times, right-click a bar, for example, and choose Format Data Series. On the Data Labels tab, click checkboxes to make the bar's Series, Category, or Value appear on the chart. For example, the Series on a sales chart would often be the product (appearing with a label such as Blenders), and the Category may be the salesperson's name.

Options on the Data Labels tab can vary by the type of chart you're working with. If you're using a pie chart, for example, the tab includes a Percentage checkbox. Check it to label each pie section with its share of the whole.

How can I make sure no one misses my chart's key point?

One popular trick is using the Callouts available under the AutoShapes button on the Drawing toolbar. They look sort of like dialogue bubbles in cartoon strips. Just drag the Callout onto the chart and then use the tail's handle to drag the tail down to the item you're highlighting. Click in the Callout to enter text such as, "Highest satisfaction rating in 10 years!" Note that your Callout is not part of the chart; it is just another item in the worksheet. To ensure the Callout is visible on top of the chart, right-click it and choose Order and Bring To Front.

How do I change my bar chart's vertical axis markings from steps of 20 to steps of 10?

Right-click the axis and choose Format Axis. On the Scale tab, enter a new figure in the Major Unit box. The Scale tab also lets you make a point with your chart. For example, Excel probably topped the chart out at 500 if the highest charted value is 482. If you want to drive home how far this was from the goal of 1,000, change the scale's maximum value to 1,000. You also may want to change the minimum value. If you're charting something like Death Valley's high temperatures on a line chart, you're wasting space by starting the scale at zero.

What's a quick way to change the chart's fonts?

To change all of a chart's fonts at once, right-click the chart and choose Format Chart Area and the Font tab. If, for example, you click a data point, you'll select the entire axis, which includes all the data points on the chart. Changes affect every item on the axis. To change a single item, click the item again and format its font using the Formatting toolbar's controls.

Can I rearrange items so that refrigerator sales are on the left side of my chart instead of dishwasher sales?

The trick here is selecting an entire data series. On a bar chart, for example, clicking any bar once selects the entire series. (A series is something like "dishwashers" in a chart showing how many dishwashers, refrigerators, and stoves each employee sold last year.) If you click the bar again, you'll select just that bar, and formatting applies to it alone. With the series selected, click Format, Selected Data Series, and the Series Order tab. Here you can use the Move Up and Move Down buttons to shift the series order. The dialog box's preview window shows how the changes will look.

BY TREVOR MEERS

Quick Studies
How-To

Word Processing

Intermediate

2002 for Win9x/Me/NT 4.0/2000/XP

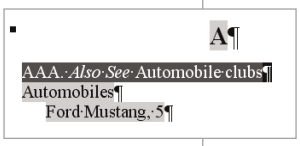
Microsoft Word 2002

Creating Index Entries, Part 3

We looked at how to make index entries in the first two columns about how to create indexes in Microsoft Word 2002. (You can find part 2 of this series in the online version of the June 2007 issue of *Smart Computing* at www.smartcomputing.com.) Now we are going to show you how to compile all of those entries into an index.

Dialog Box Functions

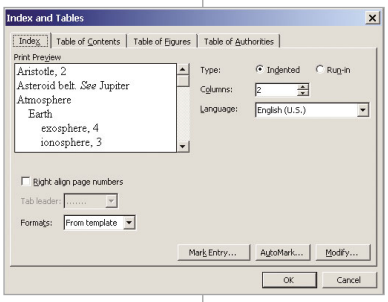
Open a Word document you can practice on and create several index entries following the methods we described in the last two columns. Click in the document where you want to insert the index. Most indexes are placed at the end of documents. Click Insert, Reference, and Index And Tables. The Index And Tables dialog box appears. Here, you'll make determinations about how you want to design the index. Click the Index tab.



You must select the paragraph symbol after the index entry whose formatting you are going to change.

Note that the dialog box also contains the Mark Entry button, which we discussed last month. Having the button here lets you make additional entries if you think of something at the last minute. You can add entries after compiling the index, too. We'll show you how below.

The dialog box contains a Print Preview window with entries, subentries, and cross-references. This lets you see what your formatting changes look like as you go along.



The Index And Tables dialog box is where you will make most of the decisions about compiling your index.

Make It Fit

First, consider what kind of index you have created and whether there are any space constraints. Choose the Run-In option next to Type in the dialog box if you want to save space. An Indented index creates a separate line for each subentry; a Run-In index starts the subentry right after the main entry. Choose one or the other now. Choose the number of columns with size considerations in mind, too. For our purposes, type the number 2 in the Columns box.

We will leave the Language box on its English default. You would want to change it if your document contains entries with non-English characters. The Spanish letter *ch* and the Swedish letter *å*, for example, would not be indexed in English.

Pick A Format

Word provides formats for indexes that let you create a design instantly. The appearance of the default format, From Template, depends on the template you are using for the document containing the index.

There are six more formats: Classic, Fancy, Modern, Bulleted, Formal, and Simple. Choose one of the formats. The Formal format applies Right Align Page Numbers and Tab Leader properties to index entries. You can apply these to other formats, too, by checking the Right Align box and choosing a leader type from the drop-down list.

On The Page

We'll pass over the Modify button for now. Click OK to compile the index and place it on the page.

Go back into the main part of the document and create a new index entry. Right-click anywhere within the index. The words of the index should now be on a gray background. Click Update Field. The index is updated with the new index entry. The update will also correct the page numbers for any entries that may have been moved to a different page.

You don't need to go through and change formatting for every entry if you want to change the look of the index. Changing one entry or subentry will change all the others of its type. Select an entry or subentry, *including* the paragraph mark after it. Make formatting changes as with other text.

The formatting should be automatically applied to other entries or subentries, depending on which you chose. If the formatting doesn't change, click Format and Style And Formatting to open the task pane of that name. The name of the selected text's style is at the top of the pane. Pass the mouse cursor over it, click the Down arrow that appears, and then click Modify Style. Check the Automatically Update box at the bottom and then click OK. Now go back and make your formatting changes, and they will be applied to all.

Creating an index is a multipart process and takes some time. It's worth knowing how to do, however, when you want to help readers find their way through a large document.

BY TOM HANCOCK

Quick Studies
Problem-Solver

Corel Paint Shop Pro 9

Troubleshoot Opening Images In Windows Explorer

Image Processing

Advanced

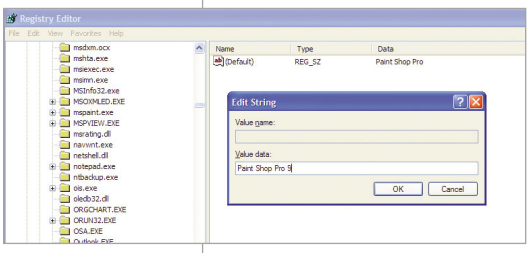
9 for Win98SE/Me/NT 4.0/2000/XP

One of the easiest ways to open an image in Paint Shop Pro 9 is to launch the software, go to the File menu, select Open, and browse your hard drive for the desired image. But for experienced users who are used to opening files via Windows Explorer, this may not be the easiest or fastest way to open image files associated with Paint Shop Pro. These users would rather view the hard drive and double-click the image file to launch it in Paint Shop Pro.

There's a known issue with this approach, however. After double-clicking the file, some users receive error messages stating that the file cannot be found, while others see the Paint Shop Pro browser with the sample images open.

Behind The Scenes

The problem lies in how the Registry—the database in your computer that contains information about user preferences and system configuration—stores information. When you installed Paint Shop Pro, behind the scenes you were instructing the Registry to store values related to the program. Unfortunately, one of those values doesn't allow you to open images that you've associated with Paint Shop Pro via Windows Explorer.



Modifying the Registry allows you to open Paint Shop Pro files via Windows Explorer.

The fix is simple, but because it involves editing the Registry, we recommend that only advanced or experienced computer users try it. It's kind of like walking on a sidewalk 5,000 feet above a chasm—most of us could do it without incident, but one slip could lead to dire consequences. (For more information on how the Registry works and how to back it up before you attempt the following, please see the February 2007 *Smart Computing* article "Registry Primer.")

Also, if you realize you've made a mistake while editing the Registry, immediately turn off the machine. Do not close the Registry editor and do not shut down the computer via the Start menu. Instead, press the power button on your computer. This will cause Windows to load from the backup Registry that it makes every time it shuts down properly, therefore your machine should boot as it did before making any Registry edits and before the mistake was made.

Ready? Let's get started.

Tweak PSP Values

First, make sure Paint Shop Pro is closed. Then, go to Start and select Run. In the Run dialog box, type **CMD**. This opens the DOS window (remember DOS?!). Where the blinking cursor appears, type **regedit** and press ENTER. This opens the Registry Editor dialog box.

If you're using Windows XP, go to the File menu and select Export. This opens the Export Registry File dialog box. (Users of other operating systems will find this command under the Registry menu.) You'll now create a backup copy of the Registry so that if anything goes wrong, you may have the option of opening this backup copy and using its settings. Enter a file name such as RegBackup, browse your hard drive for a location, and click Save. Return to the Registry Editor dialog box.

In the left pane, click the plus (+) sign next to HKEY_CLASSES_ROOT. This expands so that you see a list of hundreds of keys (they look like folders). Scroll to the Applications key (not to be confused with the .application key) and click the plus sign next to it. In this now-expanded menu, scroll until you see the key called Paint Shop Pro 9.exe. Click its plus sign.

The only key under Paint Shop Pro 9.exe is the Shell key. Click its plus sign and, next to the Open key now below it, click that plus sign. Below that, you'll see a key labeled ddeexec. Click its plus sign.

Phew. You've drilled down through all the keys in this section. Now, click the Application key. In the pane on the right of the Registry Editor, you will see a header called Default. Double-click it, and the Edit String dialog box appears.

In the Value Data text box, you should see the words Paint Shop Pro. This is where we've been headed throughout this whole process. Instead of "Paint Shop Pro," you want the text to read "Paint Shop Pro 9." So, add a space and a 9 to the text in this box and click OK. Close the Registry Editor.

That's it! The next time you reboot, you should be able to launch Paint Shop Pro files from within Windows Explorer.

BY HEIDI V. ANDERSON

Quick Studies
How-To

Presentation

Advanced

2002 for Win9x/NT 4.0/2000/XP

PowerPoint 2002

Create Classy Custom Designs

PowerPoint is meant to offer off-the-rack presentation templates that let anyone look like a professional slide designer. Because most of the people sitting in your audiences have already seen countless other PowerPoint shows, they'll spot a Microsoft-issued template instantly. And that means you look like an off-the-shelf kind of presenter rather than one of the few with information so valuable that it merits truly custom slides.

With a little work, you can avoid this problem. Sharp-looking templates are usually fairly simple, and when properly designed, they reinforce your message or brand on every slide. This month, we'll walk you through the steps of creating a template that includes many of the basic features found in today's popular custom designs.

An Understated Header

Many contemporary, great-looking presentations use color bars to set the visual tone and carry info that appears on every slide. In our example, a color bar across the top of the slide visually anchors it and provides continuity from slide to slide. To create the bar, click the Rectangle tool on the Drawing toolbar and drag it across the top of the slide. Use the Fill Color button to color the box.

The elements of a simple but professional presentation template are easy to create with colored boxes, text boxes, and photos.

Add a text box (choose Insert and Text Box and drag the box onto the bar) to carry the name of your presentation, company, conference, etc. You can even tastefully insert your company's logo in a corner of the bar, which generally looks more professional than inserting an enormous logo on every slide. (If your logo is saved as a graphics file, add it by choosing Insert, Picture, and From File.) To reinforce a brand message, insert your company's slogan in the bar below your company's logo, as in our example.

A Constant Roadmap

When an audience is convinced you're giving a well-organized presentation, it tends to stay more focused. You can remind your audience of where you are in the presentation with a running roadmap or table of contents on slides.

One way to show structure is with text running down the side of slides in another colored bar. List your major points. You could even apply bold formatting to the name of the section the current slide covers.

To create a more visual summary of your presentation's agenda, use photos to represent the sections you'll cover. Our example slide uses photos to represent three areas of a tourism presentation. We used the Picture toolbar's Format Picture button to apply grayscale color to photos for sections that aren't covered by the current slide.

Photo Illustration

The widespread availability of online stock photo services (search for "stock photos" in a search engine) means you can always find high-quality photos to illustrate ideas. You can find thousands of photos that cost just a few dollars each to use. Dropping these into slides adds a visual element without relying on dated clip art. And by choosing a professional-looking image, you'll make your presentation look like a team of designers put it together. (While it's often possible to copy a photo found on the Web or on a stock photo site, it's normally not legal to do so without permission, and sometimes that permission costs money.)

Apply It To Slides

If you'd like your sharp new design to appear in every slide, be sure to add all the elements to the Slide Master. Choose View, Master, and Slide Master and format the slide as you wish. When you click Close Master View, every element you've added will appear on every existing and new slide in the presentation.

For more flexibility, save your formatted slide as a template by choosing File, Save, and Design Template in the Save As Type pull-down list. With a template (unlike a master), you can modify individual slides. That way, if you want to do something such as change which of the three photos in our example slide is highlighted, you can do so.

BY TREVOR MEERS

Quick Tips

Secrets For Succeeding In Common Tasks

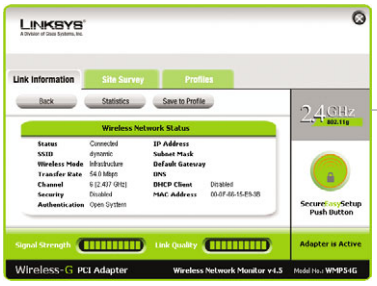
BY STEPHEN J. BIGELOW

Wireless Networks

Question: How can I tell if my wireless connection is secure? Should I only use secure wireless connections?

Answer: Wireless network devices typically install a monitor application that will report on link speed and integrity. This is true for wireless laptops and also for desktop systems with wireless NICs (network interface cards). To check the security of your wireless connection, locate the monitor applet—you can usually find it as an icon in your System Tray. Open the monitor and view your link information. For example, the Linksys Wireless Network Monitor 4.5, which installs with a Wireless-G PCI (Peripheral Component Interconnect) adapter card, can report many details about the link, including the transfer rate and channel in use. You can also see whether security features are enabled or disabled.

There are some cases in which wireless security is very important. For example, you should implement wireless security if you are sending sensitive or personally identifiable information across the network or if you are readily within range of other wireless users and want to prevent them from using your wireless bandwidth.



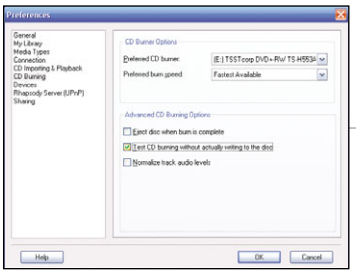
The monitor applet included with your wireless NIC (network interface card) or laptop can tell you many details about the wireless link.

Multimedia

Question: I've started burning my own CDs through Rhapsody, but I get a lot of burning errors. Is there a problem with the software or the drive?

Answer: Successful CD burning depends on an uninterrupted stream of data from the hard drive to the CD burner. If the CD burner is too fast, the hard drive may not be able to provide data fast enough, resulting in an interruption to the data stream that will break the recording process. One way to check for potential burning trouble is to test the recording before an actual burn. In Rhapsody, click Tools, Preferences, CD Burning, and select the Test CD Burning Without Actually Writing To The Disc option before you actually burn a CD. This feature tests the data transfer rates and checks for data interruptions. If the test works, the actual burn should work, too. If the test fails, you've saved yourself a blank CD.

If the test reports a problem, you may need to manually reduce the recording speed so that the CD burner does not empty its buffer to the disc quite so quickly. Otherwise, try staging the burn project to a faster hard drive.



CD burning tools such as Rhapsody can check for potential burning problems without actually writing to the blank CD.

Printers

Question: Why does my printer jam, and how can I stop jams from happening?

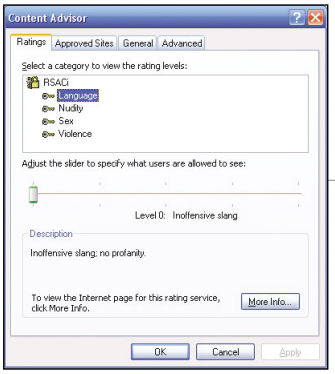
Answer: There is no way to prevent every jam, but there are a few common causes that you can address. Check the paper path for any obstructions, such as torn paper fragments, staples, or even bits of adhesive label that might have come off from a previous sheet. Any foreign matter in the paper path can cause jams. Make sure that you're not overfilling the paper supply, because too much paper can bind up the feed mechanism. Paper that is too humid, wrinkled, or textured/coated can cause jams, so try a bit of fresh, dry, clean 20-pound xerography-grade paper. If the problem persists, there may be a more extensive problem with the paper feed mechanisms that will require service or replacement.

Internet

Question: I see lots of parental control and Web filtering products, but doesn't Internet Explorer support content filtering?

Answer: Yes, Internet Explorer supports Web content filtering based on ICRA (Internet Content Rating Association) data provided by individual Web sites themselves. (The ICRA is now part of the Family Online Safety Institute, or FOSI.) The idea is that a Web site can include codes for content such as language, nudity, sex, and violence. IE reads those codes and blocks Web pages that exceed the filtering threshold that you've set. To adjust the content settings in IE, click Tools, Internet Options, and select the Content tab. Enable the Content Advisor and then set the permitted level in each category. Click Apply and OK to save your changes.

This is not a perfect process because it relies on the individual Web site operators to voluntarily rate their pages for the specified content, but it is a free feature of IE that can be very effective in blocking unwanted content from legitimate sites.



You can use Internet Explorer's Content Advisor to block unwanted content from sites that register with FOSI (Family Online Safety Institute).

Desktop Preferences

Question: How can I keep my icons from automatically appearing on the left side of the Desktop?

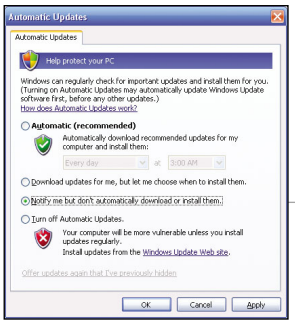
Answer: Desktop icons normally snap to a grid moving from top to bottom and left to right across the Desktop. Right-click the Desktop, click Arrange Icons By, and then deselect Align To Grid and Auto Arrange. Now you should be able to organize and arrange your icons anywhere on your Desktop.

Automatic Updates

Question: I'm always getting annoying notifications that there are updates available for my computer. How can I stop this?

Answer: Your Windows Automatic Updates feature is probably enabled. As new updates become available, Windows is downloading the updates into a queue and telling you that they're ready to be installed at your discretion. There are basically two options here: Turn off the Automatic Updates or set the feature so that the updates install automatically in the background without querying you.

To control Windows Automatic Updates, click Start, Control Panel, Security Center, and Automatic Updates. From here, you can opt to Turn Off Automatic Updates or set the feature to Automatic. Click Apply and OK to save your changes. If you turn off Automatic Updates, you'll need to remember to periodically check Windows Updates for patches and fixes. Because most PC users don't remember to do this regularly, disabling the feature is generally not recommended.



You can opt to turn off Automatic Updates or set the feature to run automatically.

Security

Question: While surfing the Web, my security software reported an attack. What should I do?

Answer: In most cases, you don't need to do anything—your security software did its job in detecting an infected file and will attempt to dispose of it. Following the initial notice, you'll probably see a report that the infected file(s) were deleted. If you don't see such a report, block your Internet access temporarily and run a complete system scan yourself. If any infected files are reported, they should be deleted immediately. It's also a good idea to repeat your scans until the results check clean.

Compiled by Jennie Schlueter
Graphics & Design by Lindsay Anker

Flash Drives:

Storage On The Go

When flash drives first came on the scene, most of us were happy to throw out our floppies and embrace the new technology. After all, flash drives are more portable, capable of holding more data, and, well, sort of cute. Now that flash drives have become the norm, manufacturers must work a little harder to distinguish their product from the rest of the pack. This means additional features, cooler packaging, larger capacities, and lower prices. We'll look at some of the basic categories that make up this huge product range to give you a better idea of just what's happening in flash land.

Just The Basics

It's rare to see a drive that only stores data, as most come with added features and cool packaging or a design that makes them more functional. But there are drives that just perform one or two basic functions. If you just want a cheap storage solution, you won't have any trouble finding 512MB or even 1GB for around $15.

Pexagon Store-It 512MB Thumb Drive

$14.99; www.pexagontech.com

It's nothing fancy, but this Pexagon will store lots of music and files for next to nothing, and it comes in 14 different colors.

Crucial Gizmo! Overdrive+ 1GB

$26.99; www.crucial.com

This drive doesn't have a key ring, but its fast transfer rates, low price, and included security software make it a nice offering.

Hard Drive Replacements

On the other end of the spectrum are the large-capacity flash drives. These devices are being marketed as replacements for traditional hard drives, especially in notebooks. This seems to be the way of the future, but at this time high costs keep them from being completely mainstream.

BUSlink USB Hi-Speed 64GB Flash Drive

$5,000; www.buslink.com

This drive offers enormous capacity with password protection. The price tag is a real problem, though.

Kanguru Flash Drive Max 16GB

$349.95; www.kanguru.com

Here's another large-capacity storage option. It's more affordable, but still pretty darn expensive.

Smart Drives

Many drives now include the U3 or similar platforms. These so-called "smart" drives let you essentially take your computer with you. You can load your browser, email application, operating system, instant messenger, and whatever else you need onto your drive. When you remove the drive, all traces of your presence on that computer are gone.

SanDisk Cruzer Micro USB 2GB Flash Drive

$49.99; www.sandisk.com

This drive has it all: a retractable USB connector, four bundled U3 programs, and a key ring. The Micro is also available in 512MB, 1GB, and 4GB capacities.

Lexar 2GB JumpDrive Mercury

$69.99; www.lexar.com

We like the Lexar Mercury's built-in storage meter that shows how much capacity the drive has left. It includes Lexar's PowerToGo portable applications software.

Novelty Flash Drives

The name says it all, really. These drives can store data, and they double as a fashion statement. Many companies, such as Custom USB Memory (www.customusbmemory.com), are even making it easy to customize flash drives for things such as marketing campaigns and promotional giveaways.

ThinkGeek Swiss Memory USB Flash Drive 1GB

$99.99; www.thinkgeek.com

This all-in-one wonder includes an LED (light-emitting diode), ballpoint pen, knife, scissors, file with screwdriver, and a key ring. The flash drive portion can be easily removed so you can get through airline security.

Imation Flash Wristband

$24.99; www.imation.com

The Flash Wristband isn't remotely close to as weird as it gets in the land of novelty flash drives, but it's definitely unique. The flexible rubber Wristband wears like a bracelet, will hold 256MB, and comes in blue and black.

Special Features

Manufacturers are going to pretty amazing lengths to make sure you choose their flash drive. The result is a great selection of drives that not only store data but also offer such features as biometric security, audio output, and memory card readers.

Kingston DataTraveler Reader 2GB

$34; www.kingston.com

Compatible with Windows and Mac, the DataTraveler will store up to 2GB of your information and also read SD/MMC (Secure Digital/MultiMedia Card) memory cards.

EDGE Tech Corp DiskGO Biometric Flash Drive 1GB

$64.95; www.edgetechcorp.com

Simply plug this drive into your computer, swipe your finger across the biometric fingerprint reader, and gain access to your secured files. The drive includes security software and a sliding cover to protect the biometric reader.

What To Do When . . .

You Encounter An Unfamiliar File

The normally problem-free process of shutting down Windows XP began to give us trouble recently. In many cases, before the operating system would shut off, we encountered a message that said, "Ending Program ccApp . . . Please Wait."

What in the world is ccApp, we wondered, and how did it get on our computer?

Turns out, the CcApp.exe file on our system is a process integral to the Norton AntiVirus program we installed recently.

Like us, you've probably encountered an unknown file and wondered if it was friend or foe. It's tempting to delete it right away, but that would be a mistake if the file, as is the case with CcApp.exe on our system, is necessary for running a legitimate program.

When you run across an unfamiliar file, there are several smart, safe ways to go about identifying it.

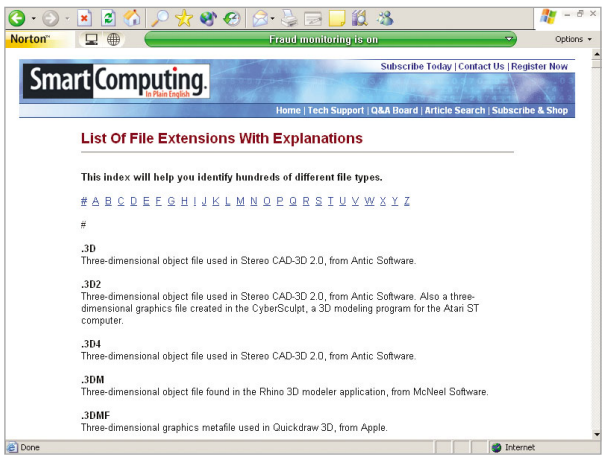
Examine The Extension

If you are curious about a file you're viewing through Windows—and thus can see its name and where it resides on your system—then the first thing you should do is right-click the file name and choose Properties from the pop-up menu. The Properties dialog box will have tabs that contain information, such as when the file was created, the name of the company that created it, and the program that opens the file. The information given here isn't necessarily comprehensive, but it's a start.

Your next step is to go online and learn more about the file by brushing up on its extension, the letters in the file name that appear after the period, such as .DOC in a Microsoft Word document file name.

Three excellent resources for this are the *Smart Computing* file extension list (www.smartcomputing.com/techsupport/FileExt.aspx), Wotsit.org (www.wotsit.org), and FILExt (filext.com). These sites offer an alphabetical list of file extensions, explaining what the extension stands for and the program(s) with which the file is created or used.

If these extension databases don't offer what you're looking for, use a search engine to find an explanation. That search may lead to another extension database, or to the company that makes the program that uses the file.



The *Smart Computing* Web site contains a database of file extensions that identify types of files and the program with which they work.

Program Processes

Special care must be taken, however, when the unknown file is an .EXE or other executable file. A program process is another way of referring to this type of file. Mostly, program processes run in the background on your system. In fact, you may be surprised to see just how many processes are running at once, even if you have few programs open.

To see what we mean, open the Windows Task Manager (press CTRL-ALT-DELETE simultaneously). First, click the Applications tab. You'll see all the programs and files you've

opened, such as Microsoft Word and Internet Explorer.

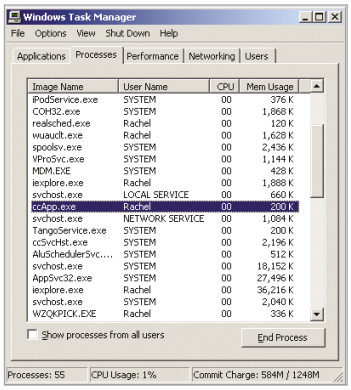
Now click the Processes tab. Because this is a list of programs running on the computer, everything listed here is an executable file. You'll also notice that there are far more processes listed than applications. In fact, at one point when we opened the Task Manager on our system, the Application tab listed one open program, but the Processes tab listed 47 processes running. As mentioned, processes work in the background, including those processes you don't want on your system.

Unfortunately, viruses, Trojans, spyware, and adware can also be executable files, and sometimes their authors give them the same names as legitimate files, or they take on the same name as legit files once they invade your system.

We found an informative site for learning about executable files and distinguishing between the good, the bad, and the unnecessary. The Uniblue Process Library (www.processlibrary.com) lists and defines executable files that are a legitimate part of Windows and other programs, such as drivers for peripheral hardware devices, as well as those that pose security risks and shouldn't be on your system. You can use this library freely.

We learned from the Process Library that the CcApp.exe file on our system provides autoprotect and email checking capabilities for Norton AntiVirus. If the file is removed, the program won't function properly—in fact, the site warns not to terminate the file.

On the other hand, Process Library also informed us that a file by this same name is a process that belongs to an advertising program. This file collects data about the user's browsing habits and sends the information back to the servers of the author of the file. In addition, the file generates pop-up ads. Process Library urges the removal of this file.



Windows Task Manager shows all the processes (executable files) running on your system.

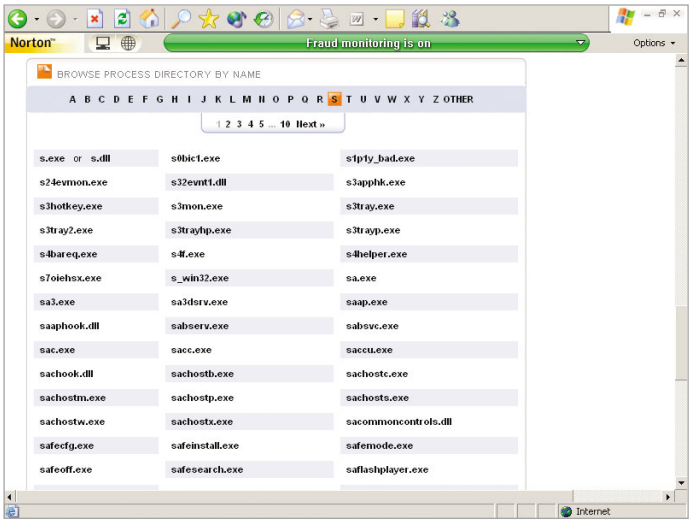
So the question becomes, how do you determine whether the executable file in question is good or bad? One answer is that it depends on the part of your system from which it is operating. If it is tucked in the folder of the program it should belong to—as the CcApp file on our system is—then you should be OK. Therefore, if you find an executable file on your system you're not sure about, check with the Process Library to identify it and then use the Search command (click Start and then Search) to determine where the file is located on your system. Finally, read what the Process Library recommends about keeping or deleting the file.

In addition, you should check with the Web site of the manufacturer of the antivirus program you use. Sites such as Symantec (www.symantec.com) and McAfee (www.mcafee.com), which are leading makers of antivirus software, include the most up-to-date information about viruses, Trojans, spyware, and adware. For example, on the McAfee home page, the Threat Center lists the names of the most recent problem files. Click the name of the file, and you'll learn such details as the type and subtype of the file, when the file was discovered, what it will do to your computer, and what level of risk it poses.

FileAdvisor

If your system is protected with an AV program that you keep updated, you should rarely, if ever, encounter a file on your system that poses a threat.

But if you want an extra layer of protection try FileAdvisor, a free search engine you can download from Bit9 (www.bit9.com/products/fileadvisor.php) or use on the Web (fileadvisor.bit9.com/services/search.aspx). The catalog indexes millions of executable files, drivers, and patches that make up programs designed for Windows, as well as malicious files that can disrupt or damage your system. With the click of a button, you can submit a name or hash (a string of numbers contained in the file) of an unknown file and receive a host of identifying information about it. With FileAdvisor, you get all the advantages offered by the other Web sites and tools we've mentioned from one source. ❚❚



Look on the Process Library Web site to find out if the unknown executable file on your system is good, bad, or unnecessary.

BY RACHEL DEROWITSCH

Examining Errors

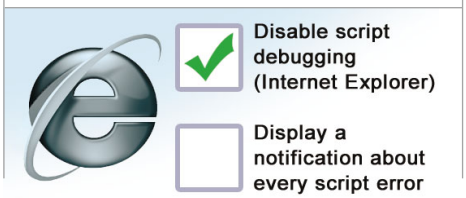
BY JEFF DODD

Problem: A reader reports problems accessing the Web through Windows XP. An error message blocks certain pages from appearing in the browser.

Error Message: "Problems with this Web page might prevent it from being displayed properly or functioning properly. In the future, you can display this message by double-clicking the warning icon displayed in the status bar."

Solution: This error has nothing to do with WinXP and everything to do with the browser's settings. The reader can bypass the error by tweaking the way Internet Explorer is configured.

The reader should start by opening the Tools menu in Internet Explorer and selecting Internet Options. On the Advanced page of the resulting Internet Options dialog box, the reader should locate and select the Disable Script Debugging (Internet Explorer) option. She also should locate and deselect the Display A Notification About Every Script Error option. Click OK to save the changes. The reader should restart Internet Explorer and then try accessing the troublesome Web sites again. They should appear on-screen this time.



Problem: A reader cannot start his computer due to the presence of a persistent error message. The reader tries to follow the instructions presented in the message, but doing so fails to boot the computer properly.

Error Message: "We apologize for the inconvenience, but Windows did not start successfully. A recent hardware or software change might have caused this. If your computer stopped responding, restarted unexpectedly, or was automatically shut down to protect your files and folders, choose Last Known Good Configuration to revert to the most recent settings that worked. If a previous startup attempt was interrupted due to a power failure or because the Power or Reset button was pressed, or if you aren't sure what caused the problem, choose Start Windows Normally."

Solution: This error message is known to occur when users install a conflicting hardware or software component. Unfortunately, the message can be hard to get rid of. The first thing the reader should do is try to isolate the source of the problem. He can do so by shutting down the PC and unplugging the power cord. If the reader recently installed an internal hardware component, he should remove it at this time. He also should disconnect all external peripherals except the keyboard and the monitor (yes, he should disconnect the mouse, printer, and network cables). He then should plug in the computer and boot it up. The error message may appear on-screen again. The reader should wait for the message timer to expire, at which point—hopefully—the computer will boot to Windows.

If it does, the reader knows that a detached hardware component is to blame for the trouble. The reader can identify the culprit through the process of elimination. He should attach one peripheral device to the PC and reboot the computer. If the computer boots into Windows, he should attach another peripheral and repeat the process until he finds the device that prevents him from accessing Windows. He then can contact the device manufacturer for further assistance.

If the preceding hardware troubleshooting tips do not rectify the problem, then the reader can assume the problem lies with the software. The first thing the reader should do is try to boot the computer to the last known good configuration. To do so, he should restart the computer and press the F8 key repeatedly to access the Windows Advanced Options Menu. He should follow the menu instructions to select the Last Known Good Configuration option and press ENTER. Depending on the circumstances, the computer may boot normally.

If it does not—and we would not be surprised if the reader finds himself in this position—the user can attempt a system recovery using the system recovery discs that came bundled with his PC when he bought it or he can reformat the hard drive and reinstall Windows. The reader can learn how to reformat Windows by referring to "Start Over" in the March 2006 issue of *Smart Computing*.

Problem: The reader is getting an error that indicates a problem with his scanner. The reader is confused because he doesn't have a scanner. He does have an all-in-one device, but the scanner on the device does not work.

Error Message: "An error occurred communicating with the scanning device. Please ensure that the scanning device is connected properly and try again."

Solution: This error message explains why the reader's all-in-one device won't scan. It simply is not configured correctly. The reader can eliminate the error and get the scanner working again by taking several steps to troubleshoot the issue. The first step is to make sure the scanner—or, in this case, the all-in-one device—is connected properly to the PC. That means disconnecting the machine's power cord for ten seconds and then plugging it in again. After that, the reader should disconnect the device from the PC's USB port, wait ten seconds, and then plug the USB cable into a different USB port on the computer. The reader should reboot the PC and check the scanner to see whether it is working properly. If it isn't, he should disconnect all USB devices from the computer and reconnect the all-in-one machine to a different USB port. After rebooting again, the scanner may function properly.

If the problem persists, the next step is to verify that the computer meets the system specifications to accommodate the all-in-one device. If the PC is running short on memory, for instance, the device may not run properly. The reader can refer to the users manuals or contact the manufacturers to determine the all-in-one device's system requirements and the PC's system specifications. Hardware shortcomings should be rectified before the reader continues.

Assuming the system specifications are all in order, the last solution is to reinstall the all-in-one device and its software. The reader should access the Add Or Remove Programs utility in the Control Panel and remove the software associated with the all-in-one device (the reader can learn the name of the software by referring to the product's users manual). When the software is uninstalled, the reader should unplug the all-in-one device from the electrical outlet, disconnect it from the PC, and then shut down the computer. He should let the computer rest for a period of no less than ten seconds, and then he can reboot the PC.

Finally, the reader should reinstall the all-in-one device and its software by following the installation instructions provided by the manufacturer. After installing the software and hardware, he should try to use the scanner component of his all-in-one device. Hopefully, it will work.

Problem: Whenever a reader tries to access a hyperlink contained within an email message, he receives an error message.

Error Message: "This operation has been canceled due to restrictions in effect on this computer. Please contact your system administrator."

Solution: The reader has encountered a known bug in WinXP. Microsoft has released a fix, but the reader must contact the company in order to get it. He can contact the Microsoft support technicians at (866) 234-6020 to explain his problem and receive the necessary fix. Normally, a $59 charge would apply, but Microsoft may drop the fee given the fact that the problem is caused by the company's software.

Have questions about an error message you've seen? Send us your message (errormessages@smartcomputing.com), and we'll try to decipher it. Tell us what version of Windows you're using, give the full text of the error message, and provide as many details in your explanation as possible. Volume prohibits individual replies.

Fast Fixes

Microsoft MapPoint 2006 & Streets And Trips 2007 Construction Update

Problem: Microsoft must periodically release updates to its mapping software to ensure that it contains recent highway and road construction information.

Resolution: Download the most recent construction update from Microsoft's Web site. Go to www.microsoft.com/downloads and type **MapPoint 2006 And Streets And Trips 2007 Construction Update** in the Search field. Click Go. Click MapPoint 2006 And Streets And Trips 2007 Construction Update. Make sure that neither MapPoint nor Streets And Trips are running before you click Download. Save the file (ConstructionA6021212.dat). Browse to the directory in which your mapping software is installed. Most likely, the location will be C:\PROGRAM FILES\MICROSOFT MAPPOINT or C:\PROGRAM FILES\MICROSOFT STREETS AND TRIPS. Within that folder, you should find another folder named Data. Click to highlight Data and click Save. After the download is complete, launch MapPoint or Streets And Trips. The new construction data should be incorporated and ready to use.

www.microsoft.com/downloads

WinAmp Pro 5.33

Problem: NullSoft has acknowledged a bug in earlier versions of WinAmp Pro which could cause video to freeze when a user tries to change the video display settings.

Resolution: Install Version 5.33 of WinAmp Pro, which fixes this and other bugs from WinAmp 5.32. When you launch WinAmp Pro, if a dialog box appears and says that a new version is available, choose to install the latest version and follow on-screen instructions to install the update. If you are not yet running WinAmp Pro 5.33, but a dialog box does not automatically appear, go to download.nullsoft.com/winamp/client/winamp533_pro.exe. When prompted, save the file to your hard drive. After the download is complete, locate the file Winamp533_pro.exe and double-click it to launch the installer. When prompted, enter your WinAmp Pro registration key and click OK.

download.nullsoft.com/winamp/client/winamp533_pro.exe

Update For Windows XP

Problem: After you install Security Update KB925902 or Security Update KB928843, the Realtek HD Audio Control Panel may no longer work.

Resolution: Install a 703KB update, which will restore functionality to the Reaktek HD Audio Control Panel. Go to support.microsoft.com/search and type **KB935448** in the For field in the blue box in the center of the screen. Click Search. In the resulting list, click Certain Third-Party Applications May Not Start, And You Receive An Error Message When You Start The Computer: "Illegal System DLL Relocation." Scroll down until you see the Resolution section of the page. Then find and click Download The 935448 Package Now. On the resulting page, click the Download button. When prompted, save the file to your hard drive. Once the file is downloaded, locate the file (WindowsXP-KB935448-x86-ENU.exe) on your hard drive and double-click to install it. After the update is installed, restart your computer.

support.microsoft.com

Security Update For Windows XP (KB931261)

Problem: Microsoft has identified a problem in WinXP that could let an attacker take advantage of Windows' Universal Plug and Play technology to gain control of your PC.

Resolution: Download and install a 549KB update that patches this hole. Go to support.microsoft.com/search and type **KB931261** in the For field. Click Search. Then click MS07-019: Vulnerability In UPnP Could Allow Remote Code Execution. Under the Summary heading, click the link under IT Professionals. Under Affected Software, click the Download The Update link to the right of Microsoft Windows XP Service Pack 2. On the next page, click Download in the blue box. When prompted, save the file to your hard drive. After the download is complete, locate the file (Windows XP-KB931261-x86-ENU.exe) and double-click it to begin the installation. After installation, restart your computer.

support.microsoft.com/search

Fix Of The Month

PowerProducer 4.0 build 1501

Problem: Your current copy of CyberLink PowerProducer 4.0 is not compatible with Windows Vista. You may have noticed other problems, such as file names disappearing or the program crashing during DV (digital video) capture.

Resolution: Download and install the PowerProducer 4.0 build 1501 patch, which will provide Vista support and resolve many of the bugs in earlier releases. Go to www.cyberlink.com, click the Downloads tab, find the line labeled CyberLink PowerProducer, and click the corresponding blue icon in the Patches column. On the resulting page, click the Click Here link in the box dated 2007-03-22. Next, click the red Download button on the right side of the screen. Save the file. Locate the file you downloaded, double-click it, and follow the on-screen instructions to install the update.

www.cyberlink.com

Q&A

Need help with your hardware or software? Looking for simple explanations on technical subjects? Send us your questions!

Get straight answers to your technical questions from *Smart Computing*. Send your questions, along with a phone and/or fax number, so we can call you if necessary, to: *Smart Computing* Q&A, P.O. Box 85380, Lincoln, NE 68501, or email us at q&a@smartcomputing.com. Please include all version numbers for the software about which you're inquiring, operating system information, and any relevant information about your system. (Volume prohibits individual replies.)

Multimedia

Q I have many gigabytes of songs in iTunes on my Pentium 4 computer. Because I was running out of space, I bought an external USB 2.0 drive. In order to free up space on my computer's internal drive, is there a way for me to move the iTunes data onto the external drive? Would I have to leave the external drive on all the time, or could I turn it off when I didn't need it? I know that I should leave the iTunes program on the internal drive.

A Migrating your data to an external drive will allow you to expand your collection of music, podcast, and video files without the worry of filling up your existing hard drive. In addition, you're not limited to just an external drive. If your computer has room for an extra internal drive, iTunes can also access this extra space.

To move your existing iTunes collection to the new drive, first connect it to your computer and make sure that Windows has assigned it a drive letter. Next, launch iTunes and select Edit and Preferences. Open the Advanced tab and beside the iTunes Music folder location, click Change.

Select the location of your new hard drive, use the Make New Folder button to create a directory to hold your media files, and then click OK. Next select the checkbox next to Keep iTunes Music Folder Organized and Copy Files To iTunes Music Folder When Adding To Library. Click OK to close the Preferences window.

Now that you've told iTunes to use the new location on your external hard drive, you need to transfer your existing media files to the new location. In iTunes, click Advanced and select Consolidate Library. Click Consolidate to copy all of your media into the new location. This may take a while, depending on how many songs and videos you have in your iTunes collection.

Once you've migrated all of your songs to your new external hard drive, you'll need to keep it connected and powered on when you wish to access your iTunes files or want to add new files to the hard drive. As long as you remember to turn it on before launching iTunes, there's no harm in shutting the hard drive down when you aren't using it.

Utilities

Q I've purchased a new hard drive, and need to know how to load all my programs and user files onto the new drive.

A As with many computer components, the price for hard drives has dropped tremendously over the last few years when measured in terms of dollars per gigabyte. Where a 20GB or 30GB drive was once standard, many vendors are now shipping computers with drives as large as 750GB. Terabyte-sized drives (about 1,000GB) are now available, and should be common by the end of 2007. For those who have large music, video, or photo collections, these cavernous drives are a boon.

To take advantage of these drives, users have two options: Install an additional drive in their systems if they have room in the computer's case, or replace the original drive with the new one. (Of course, one can also opt to add an external drive; in terms of the migration strategy described below, this is analogous to adding an internal drive.) For most users, the newer drives will offer increased performance when used in place of the original drive shipped with the computer. Newer drives feature larger memory caches to hold frequently accessed data, spin their hard drive platters at a higher rate, and access data faster than older drives. We almost always

If you do decide to throw away or recycle your old drive, be sure that you wipe any personal data from the drive . . . Forgetting this step can be a critical mistake in this age of identity theft.

recommend replacing the original system drive in lieu of simply adding a new drive.

Migrating the data stored on your original drive used to be a perilous task, but is now a mature technology. Software such as Migrate Easy 7.0 (www.acronis.com) allows you to copy your Windows installation, applications, and personal data from the old drive to the new drive. We'll walk you through how to use it when replacing an old drive.

Migrate Easy 7.0 is simple to use in either its Manual or Automatic mode. First, install your new hard drive in your computer following the instructions included with the new drive. Next, install Migrate Easy 7.0 and restart your computer. Launch Migrate Easy and select Disk Clone. Next select either Automatic or Manual and click Next. Automatic disk clone mode will copy all your existing applications and data onto the new drive, preserving the existing partition format, while expanding the storage capacity of your partitions to use all the available space on the new drive.

Manual drive cloning mode gives you greater flexibility in adjusting partition sizes as well as safely deleting personal data from your old drive when the cloning process has successfully completed.

Migrating your old applications and files onto the new drive can take some time, depending on how much data you've stored on your old drive. Eventually the cloning process will complete, and you'll be able to remove your old drive from your computer for disposal or reuse in a different system.

Migrate Easy 7.0 retails for $39.99 (download), but there are also many alternatives such as Symantec's Norton Ghost 10.0, which has similar functionality. In addition, many drive vendors have realized the value of migration utilities, and often include a rudimentary tool to perform the disk cloning procedure.

If you do decide to throw away or recycle your old drive, be sure that you wipe any personal data from the drive. Migrate Easy 7.0 includes a data wipe utility that should do an adequate job of removing personal data, and there are numerous other utilities that will do the same task. Forgetting this step can be a critical mistake in this age of identity theft.

Hardware

Q When I start my computer, it takes a long time for the Desktop icons to appear. I'm running Windows XP Home Edition, with 128MB of RAM. Any ideas on how I can make this work faster?

A The symptom you're describing relates to a number of components in your computer: CPU, hard drive, and system memory. We'll walk you through how each of these affects your system's start time to determine where to concentrate on any upgrades. In addition to hardware upgrades, we'll outline some simple maintenance steps that can also help startup times.

When Windows is first started, it loads several programs into memory (RAM) from your hard drive. These programs contain information about both Windows and your personal data and applications and how to retrieve this data. Once these programs are running, Windows will perform two tasks: starting any applications you've configured to start when Windows starts, and loading your profile. When Windows has completed these two tasks, your computer is ready for use.

The three system components we previously described all play a role in this startup process. Your CPU has to run all of the applications, your hard drive has to deliver the applications to the CPU, and your RAM has to provide a fast place for your CPU to store data. Making improvements to these three components is a balancing act; it does no good to upgrade your CPU if you're also short on RAM or have a slow hard drive.

The first component we'd recommend upgrading is your computer's memory. Although Windows XP can run with just 128MB of RAM, it will benefit greatly from additional memory. When a computer uses all of its RAM and needs to temporarily store data for the CPU, it uses a portion of the hard drive as a surrogate for RAM. This is very inefficient and should be avoided if at all possible. You didn't mention your computer make or model, but we'd

recommend upgrading your system to at least 256MB or higher. Memory upgrades are quite affordable from vendors such as Crucial (www.crucial.com), and installing additional memory is a quick and relatively easy process.

As far as your CPU, unless you're using an old CPU that is under 1GHz in speed, we wouldn't recommend upgrading this before increasing your RAM. Although we wouldn't recommend running Windows XP Home on the minimum recommended chip speed of 233MHz, we've found that anything above 1GHz is usually adequate for most users. The same is true of hard drive upgrades. Unless you've filled your existing hard drive to the brim, upgrading your hard drive won't improve your system's performance significantly.

If upgrading your RAM is not an option, there are three steps you can undertake to improve your startup times. First, defrag your hard drive. Click Start, Control Panel, and Performance And Maintenance. Next select Rearrange Items On Your Hard Disk To Make Programs Run Faster. Click Defragment, and the Disk Defragmenter will begin sorting programs and data on your hard drive into a more efficient layout.

The next step is to reduce or eliminate the number of applications that are started automatically when Windows starts. Click Start, All Programs, and Startup. Any programs listed in this menu will be started automatically when you start Windows. Look through any listed applications and remove any unnecessary ones by right-clicking on the application and selecting Delete. Don't worry, this won't remove the applications from your computer. They just won't be started automatically.

Online

Q I noticed that few people use the Netscape browser anymore. I have used Netscape 7.2 for several years and have it configured with Mail in the top toolbar. I like how I can click the Mail icon while on any Web page, and my email download pops up over the current Web page. I have it configured to begin downloading immediately. When I upgraded to WinXP, I downloaded Netscape 8.1.2 and tried to set it up to operate the same way. I could not find a way to put the Mail icon in the Netscape 8.1.2 browser toolbar to operate like the 7.2 version. After much exasperation, I uninstalled the 8.1.2 version and installed 7.2. As of now, you can't run fast enough to give me any other browser!!

Did I overlook something when trying to set up the 8.1.2 version? Is there a procedure to put the Mail icon in the 8.1.2 toolbar?

A We can't tell you about version 8.1.2, because Netscape has moved on to version 8.1.3 and its online help feature gives procedures for this newer version. Where version 8.1.3 is concerned, the answer to your question is that there is indeed a procedure to add buttons to the toolbars when you employ Netscape's Multibar. These specialized toolbars allow you to combine the features from any toolbar into one consolidated series of trays containing related tasks.

It is worth noting that the terms, "mail," "email," and "Webmail," as well as variations on these terms, are missing from the 8.1.3 Help index. However, the screenshot examples in the Multibar section of Help show several different Webmail buttons as well as references to mail.

Our advice? Discard 8.1.2 and download Netscape 8.1.3 to give it and its Multibars a try.

Software

Q I'm an old man and not very computer literate. I bought a Sony VAIO VGN-FS980 with Windows XP. For health reasons, ,I'm unable to spend much time at our desktop computer. It is a Dell Dimension 1400 running Windows 98. Both computers have Roxio Easy CD Creator programs. The old computer has Easy Creator 5, but the VAIO has a newer version, Roxio Digital Media SE.

I wanted to install the newer version on my old computer so that they both had the same program. I tried to copy it to a disc and failed.

I contacted Roxio and they told me I had to contact Sony for any software bundled with my VAIO. Sony told me I couldn't do it. I wish I could copy the disc as I think if I bought the program in a store, it would cost close to $100.

My question to you folks is this: Is there any way I can make a disc in case I need one if my VAIO breaks down? I would like a disc also, as I say, in order to put the program on my old computer. Any info would be much appreciated. Thanks.

A Sorry, but we can't help you make a copy of Roxio's Easy Media Creator to transfer to your desktop computer. To begin with, computer software is protected by copyright. You're not supposed to run it on two systems at once. Easy Media Creator also uses a copy protection method that requires you to activate it online, and this will prevent it from running on the second system. Even if this were not the case, Easy Media Creator (any version) will not run on your desktop system. The software is not compatible with versions of Windows prior to Windows 2000.

Having said that, this doesn't mean you can't make a backup of the contents of your VAIO (to do this click Start, All Programs, Accessories, System Tools, and Backup), nor does it mean you cannot burn CDs on both of your computers.

So, we appreciate that you would like to have the same program running on both systems, but it's simply not possible.

Windows Vista

Q I used to have a program on my Windows 95 computer called Print-screen 95 version 7 from Super Simple Software, which was perfect for me. Now I have a new HP Vista computer model with high-speed Internet and I cannot load it! Can you suggest a replacement?

A The replacement you're looking for is already part of Windows Vista. It's called the Snipping Tool and you invoke it by clicking on Start, All Programs, Accessories, and Snipping Tool. Once loaded, the Snipping Tool allows you to take an image of a whole screen, a window on the screen, a rectangular area of the screen, or a freehand area of the screen. Once captured, you can save the screenshot in a variety of file formats or place it on the Windows Clipboard for immediate use elsewhere.

Hardware

Q I recently switched from dial-up to Bell South DSL (Digital Subscriber Line). I had previously installed Symantec's WinFax Pro 10.0. Since it was no longer needed, I dropped the second telephone line. Now the computer and the home phones are on the same number. Whenever we receive a phone call, we hear a loud screeching and the phone immediately goes to voicemail. I disabled the modem associated with WinFax but the screech persisted. Even when I uninstalled WinFax and then reinstalled it, the noise was still there. In desperation, I uninstalled WinFax again. How can I utilize DSL and WinFax together?

A We don't think the screeching you're hearing is related to WinFax or to the modem in your computer. When some of our staff members acquired DSL home accounts, they were provided with filters from their ISPs (Internet service providers) to attach to every phone line in the house, except the line leading to their DSL modem. These filters sift out the noise of your Internet connection so that you can have a phone conversation or use the same line for fax transmission. Another scenario that would account for the noise you're describing would be having both WinFax and your modem still installed and WinFax set to answer on the first ring. This also might occur if, without WinFax, your internal modem was set to auto-answer on the first ring, and/or your voicemail system was also set to answer immediately.

Frequently Asked Questions

Answers to users' most common questions about Personal Security

The best way to protect yourself from anyone tracking your browsing habits is to delete your browsing information when you're done using the PC.

FAQ How do I know if it's safe to purchase products online? What can I do to reduce the threat of personal data theft?

Whenever you use electronic payments, such as credit or debit cards, there is always a risk of personal information being exposed. Even large and reputable companies have received unwanted media attention after their loss of millions of user credit and debit card records. So purchasing products online is really no more or less secure than purchasing from any retail outlet—the purchase still leaves records that the seller must store and protect.

If you do choose to make online purchases, provide as little personally identifiable information as possible when placing the order. Next, only place orders over a secure Web site protected with SSL (Secure Sockets Layer) encryption. You can easily tell when a Web page is secured by the little yellow padlock symbol that appears in the lower-right margin of your browser window. Also, the URL will begin with "https" instead of "http." SSL encryption will prevent your data from being intercepted and read while in transit across the Internet. Finally, always take the time to read your credit card and bank debit statements and report anomalous activity to your credit card company or bank immediately so that you are protected from bogus charges.

FAQ How can I stop others from keeping track of my browsing habits?

Cookies are small text files that many Web sites install on your hard drive and use to collect information as you surf. Most cookies are totally innocuous—for example, a cookie may provide your name and preferences to a Web site that you visit often. However, some cookies can be more intrusive in the data they provide. Web browsers are also notorious in the way they track your browsing history, which can also be read by others.

The best way to protect yourself from anyone tracking your browsing habits is to delete your browsing information when you're done using the PC. For instance, with Internet Explorer running, click Tools, Internet Options, and then click the General tab. Click Delete Cookies to eliminate cookies from your browser. (Note, however, that deleting cookies may also cause some sites to no longer remember you or your preferences, forcing you to log in manually and possibly fill in data you've previously entered.) Click Delete Files to remove images and Web site elements cached to your hard drive. Click Clear History to delete the browser's history file. You can take these three actions at any time.

FAQ How can I keep my kids out of Microsoft Money and other important files when they use my computer?

If your family is all logging in to the same user account, be sure to make frequent backups of your sensitive information to a thumb drive or other removable media that you can secure. Next, protect sensitive applications such as Money or Quicken by using a password that only you (and your spouse) have access to. For more comprehensive protection, create an account for each user or user group so that you have a supervisor account and the kids have their own account(s). If you install applications so that they are only visible on that particular account, the kids won't even see your installation of Money or Quicken, etc., and they won't be tempted to take a peek.

Other sensitive files can often be password-protected directly through the application. For example, Microsoft Word can password-protect a Word document by clicking Tools, Options, and selecting the Security tab. You can then enter passwords to secure and share the document. Of course, you'll need to keep track of those passwords. One popular tactic is to write down those passwords and put them in the home/office fire safe just in case you forget them.

Are you having trouble finding a product or getting adequate service from a manufacturer? If so, we want to help solve your problem. Send us a description of the product you're seeking or the problem you're having with customer service. In billing disputes, include relevant information (such as account numbers or screen names for online services) and photocopies of checks. Include your phone number in case we need to contact you.

Letters may be edited for length and clarity; volume prohibits individual replies.

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Pardon HP's French & A Lemon PC Leaves A Sour Aftertaste

In* Smart Computing's *January 2007 issue, you provided instructions for ordering Windows XP Recovery Discs from HP. I took your advice and ordered the discs, but when they arrived, I noticed that I had received the French version of the discs instead of the English version I need. I called HP on five different occasions before an HP representative finally assured me that the English discs would arrive. To date, I still have not received the discs. Now I just want a refund for the $15.93 (after shipping and tax) I was charged.

Robert Huffman
Schererville, Ind.

We called our HP contact, who informed us that Robert could expect both a refund and the English language version of his recovery discs to arrive in the mail very soon. The discs arrived, but it wasn't until roughly a month later that the refund finally processed. He was also told he could keep or toss the French discs. We suggested he use them as coasters for his favorite wine.

In May 2004, I bought a Compaq Presario desktop computer that has never worked right. In 2004 alone, I spoke with HP 13 times for multiple hardware- and software-related problems. In 2005, I contacted HP again about a faulty CD drive, which HP promptly replaced. In 2006, I contacted HP again regarding further instability issues on eight separate instances. So far this year, I have spoken with HP twice. Over the course of my dealings with HP, I have been asked to perform a destructive reinstall on multiple occasions. I tried to get a refund early on, but HP kept convincing me to try different things, and now, three years later, the computer is still a lemon and all I want is my money back. Can you help me out?

Sue Bonnett
Morehead City, N.C.

We contacted our HP representative and forwarded the details concerning Sue's three-year-old computer and her laundry list of valid complaints. Within a day, Sue heard back from an HP Consumer Advocate who offered to buy back or exchange Sue's PC. Sue opted for an exchange and sent him a list of the components and software she wanted in her new HP computer. Roughly a week later, Sue received a call from another HP representative, Tina, who said she could expect her new computer, along with a box and shipping label for sending back the broken Presario, to arrive in about two weeks.

Less than a week later, Sue received a 17-inch LCD monitor and the paperwork for a two-year HP House Call Extended Service Plan. A few days after that, Tina sent Sue a list of specs for her new HP Pavilion, which included Vista Home Basic, Microsoft Office Basic 2007, a 2.4GHz AMD Athlon 64 3800+ processor, 1GB of memory, and an Nvidia GeForce 7300LE graphics adapter. Sue was somewhat disappointed that her request for Vista Home Premium, 2GB of memory, and a LightScribe-capable DVD/RW drive had not been fulfilled. Sue asked to have the system upgraded, but Tina said that the computer was already assembled and undergoing final testing.

When Sue got the new computer, she connected the monitor to the tower but couldn't get a signal to the display on the monitor. HP's technical support tried to troubleshoot the problem but said she might have a faulty graphics card. Sue did a quick search on *Smart Computing's* Tech Support Center and found a How-To article about connecting monitors and graphics cards and fixed the issue herself.

We contacted HP about getting Sue's computer upgraded, but were told that "any adjustments [Ms. Bonnett] wants to make to the specs will have to be her responsibility."

Sue stated that while she didn't get exactly what she wanted (and had a few components downgraded from her previous computer), she's generally satisfied with the new computer.

Outsourcing Storage

As usual, my daily backup lumbered along, eating up memory and interrupting the flow of music from the external hard drive my backup files and MP3 collection shared. The disruption was annoying, but familiar. Then, all of a sudden, things got worse. Before I knew it, I was upgrading my backup drive and "outsourcing" the bulk of my file storage to an external hard drive. You should consider doing the same.

I've had a smallish (20-GB) external USB drive for several years, and it used to work fine for daily My Documents backups. But I discovered (the hard way) that you also need backups of iTunes files in case something happens, unless you want to buy them again. After that, it didn't take long before each backup consumed a good part of the afternoon and "disk full" messages began appearing. As a responsible IT professional, I followed the only sensible course of action for dealing with slowdowns and maxed-out capacity. I ignored them. Rescheduling other work and excluding folders from backups seemed a whole lot easier (and cheaper) than upgrading my external storage. But when my drive suddenly wouldn't draw power consistently and started making funny noises, I knew it was time to face reality.

At the same time, my secondary internal drive (a mere 80GB) was filling up rapidly with full seasons of "The Office" and "Bones," new albums, and Virtual PC Vista installations. In my foolish youth, I'd have bought yet another internal hard drive (requiring jumper and cable configuration, installation, and formatting) and then figured out how to move data from the drive being replaced to the new drive. I suppose I must have had less to do on the weekends back then, or else I had a strange definition of "fun." Come to think of it, both are true. This time, though, I decided to kill two birds with one stone and save some hassle.

External hard drives have plenty of advantages over internal drives for storing data (though they aren't necessarily better for storing applications). They're more convenient, with Plug-n-Play functionality that doesn't require opening the case or reinstalling software. They're more flexible—you can add practically as many new drives as you want without any special configuration. External drives also help protect your data. Backups aren't reliant on the same internal electronics as their source files, and two hard drives are less likely to fail than one. They're also portable. We travel quite a bit, and though I'm not going to pack an extra bag just to bring Greg Brown and Sundance Short Films along, it's easy to pack a drive for laptop playback when we're loading the car for a weekend in the Poconos or a long road trip to Michigan.

External transfer speeds, even with USB 2.0 and IEEE 1394 (commonly called FireWire or i.Link), won't beat internal connections or buses, so you can't run Windows or your favorite games from them. But you won't even notice the extra half-second it takes to open your budget spreadsheet or buffer the latest "Lost" episode. Finally, external drive prices are more competitive than ever, especially when you consider time and convenience factors. In general, external drives cost about 15% more than their internal competition. One Saturday afternoon is worth more than the difference.

After a less-than-exhaustive search of options (browsing BestBuy.com, CircuitCity.com, Newegg.com, and eBay), I opted for a 250GB Western Digital My Book. I've had good luck with Western Digital drives in the past, and, for $108 (including shipping), it was a deal that couldn't be beat. I'm counting on this drive to handle all my backups plus my most recent R.E.M. and Grandmaster Flash infatuations. It should provide plenty of space to collect my favorite TV shows from now until the networks cancel them. And you can't beat it for simplicity. It's just 7 x 2 x 5 inches (HxWxD) and only has two ports—one for power and one for the included USB 2.0 cable.

When you're proactively considering a storage expansion, or the next time a drive dies, do your data, and your afternoons, a favor and outsource file storage to a big, fast external hard drive. ■

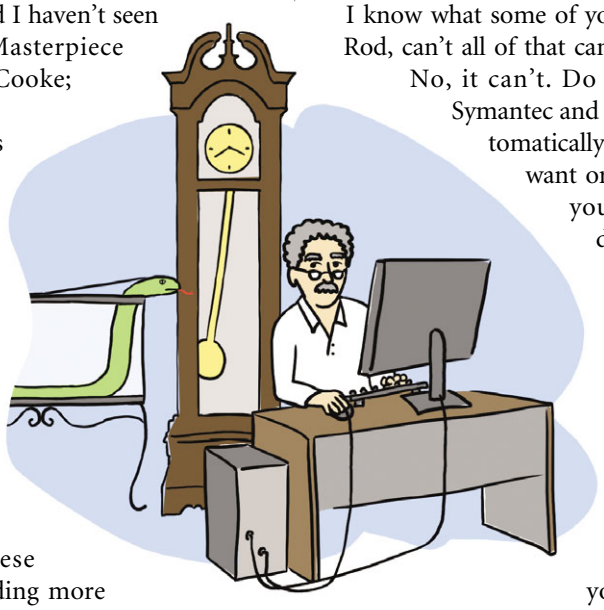
BY GREGORY ANDERSON

Gregory Anderson *is a regular contributor to* Smart Computing *and several other technology publications. He keeps a sharp eye (with the help of thick glasses) on computing trends and enjoys working with geeks of all stripes—most of the time. Reach Greg with your storage sagas at* **gregory-anderson@smartcomputing.com**.

All Work & No Play

Let's pretend that we all have normal jobs. You know, 40 hours per week, 8 to 5, Monday through Friday. I know that a lot of you work many more hours than that. Of course, some of you are retired and don't "work" at all, at least not at a regular job. But stay with me here; for the sake of this "thought experiment," let's assume that we all work 8 to 5, Monday through Friday.

What do we do in our "off" time? Well, lots of things! Some of us bowl. We do volunteer work in the community. We putter around the house and in the yard. We offer our children unsolicited advice that they'll ignore, just as we did when it was offered to us by *our* parents. We watch "Dancing With The Stars" and then, when asked at a cocktail party or a backyard barbecue, we pretend that we haven't watched television in years. ("Oh, no, afraid I haven't seen that! I do occasionally watch 'Masterpiece Theater,' though. That Alistair Cooke; he's such a card!")



The other thing we like to do is mess around with our computers. We want to surf the Web, zap off a few emails, forward a couple of hoary jokes, check up on our ongoing deal with the nice Nigerian guy who's supposed to be sending us $200 million, burn a CD or two, and maybe sort our digital photos.

You may have noticed, though, that you're spending less time actually working (or playing) on your computer these days. That's because you're spending more and more time just trying to keep it running.

The numbers don't lie. First, let's assume that you end up "working" about the same number of hours over a weekend as you do on any other day; it's just that, over the weekend, you're working in the yard, washing the car, dusting the house, cleaning out the garage, etc., instead of shuffling papers around for Amalgamated Widgets. Let's further assume that it takes you about an hour to get home from work, get changed, find little Tommy's escaped python, and get him back in his cage. (The python, not Tommy. By the way, better write yourself a note to buy little Sally yet another gerbil.) If you wish to be in bed by, say, 11 p.m., that means that you have basically five hours per day—about 35 hours per week—that you can devote to your computer. Hey, that's not bad!

Ah, but then there's food. Man does not live by gerbils alone. (Pythons, yes; man, no.) So let's subtract another hour per day for dinner. So now you're down to 28 hours per week. (Also, if you're married—and assuming that you wish to *stay* married—you might need to add another 15 minutes or so for helping with the dishes after dinner is over. But we'll let that chunk of time slide for now.)

So now you have roughly 28 hours per week, or 240 minutes per day, during which your computer is yours to enjoy.

So, how will you spend your 240 minutes? Writing that Great American Novel? Doing genealogical research? Emailing Congress as to exactly what's wrong with the country and how our representatives should go about fixing it? Working up the family budget? Planning your next vacation?

Nope, none of that. You're going to spend your 240 minutes downloading and installing updates, upgrades, and patches and then scanning for viruses and spyware.

I know what some of you are saying. You're saying, "But Rod, can't all of that can be taken care of automatically?" No, it can't. Do you really trust Microsoft and Symantec and Nero and all the rest of 'em to automatically decide for you which updates you want or need? And having done that, do you now trust those companies to download and install those updates while you're not around to see how it's going?

Of course not. You weren't born yesterday. You're not going to trust software developers to make those decisions for you, so you're going to examine, decide upon, download, install, and then check each update yourself. Hmmm, let's see. . . . If you regularly run 15 applications and each one takes about 20 minutes to check, update, and then test (and we won't even count the time you spent setting Restore points "just in case"), then that means you'll spend 300 minutes per week updating and checking your 15 programs.

Oh, oh. It'll take you 300 minutes to keep everything up-to-date, but you only have 240 minutes of computer time. You're now one hour in the hole. Forever.

If you disagree, I'd love to hear from you. Just sit down at your computer, send me an email, and. . . . Oh, wait, that's right, you *can't*. You don't have time! ❚

BY ROD SCHER

Rod Scher *is a former software developer and a recovering English teacher. He's also the publication editor of* Smart Computing *and will no doubt continue in that position until such time as his boss reads this column. Contact Rod at* **rod-scher@smartcomputing.com.**

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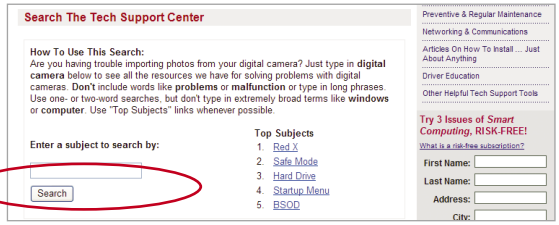

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4. If you can't find an answer to your question, try posting your question on our reader-response Q&A Board. (Keep in mind that this feature is available only to paid subscribers.)

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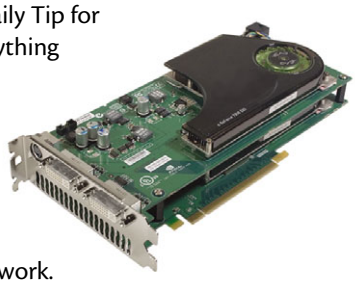
If you've ever had a computer meltdown, you know the value of backing up your data. Avoid a mental meltdown by reading up on backups and recovery before disaster strikes. Go to our Tech Support Center and scroll down to Backups & Data Recovery to get started.



Look to our Daily Tip for advice on everything from how to troubleshoot a graphics card to how to set up a home network. You'll find it on our home page in the SmartComputing.com Daily section.

Make the most out of your time online. You'll find tips for using browsers and email in the Other Helpful Tech Support Tools section of the Tech Support Center.

From *Smart Computing's* Dictionary

recover To stabilize a PC after an error has occurred. If used in conjunction with a program, to recover means the program stabilizes itself and returns to use without user intervention. Often "recover" is used to describe getting files back after a hard drive error. In this case, a recovery program searches for whatever information remains in storage. Whatever is found is "recovered."

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